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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) Voluminous data is acquired to support Department of Defense weapons and other purchased hardware. Procurement and Production officials have concluded that data costs are on the rise and corrective action is necessary to overcome this potentially serious problem. Through a survey of studies and guidance documents, the structure of data management policy is modeled. From visits and interviews with data management officers, program management officials, and policy-makers, an operational practices model is developed and described. Comparison of these two (over)		

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models and a comparative examination of contracted data requirements led to the study findings.

Excessive, redundant, and deficient data requirements may be reduced or identified through the use of a proposed Data Requirements Checklist. Determination of data adequacy may be improved by instructing contractors to deliver data products to a single technical office. Specifications, drawing packages, technical publications, and computer programs should be separately priced.

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ARMY PROCUREMENT RESEARCH OFFICE

APRO 83-04

FINAL

BALANCING ARMY DATA ACQUISITION
POLICIES AND PRACTICES

MAY 1984

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U. S. ARMY MATERIEL SYSTEMS ANALYSIS ACTIVITY
ARMY PROCUREMENT RESEARCH OFFICE
FORT LEE, VIRGINIA 23801

FINAL

BALANCING ARMY DATA ACQUISITION
POLICIES AND PRACTICES

by

Tracy Worthington

The pronouns "he," "his," and "him," when used in this publication represent both the masculine and feminine genders unless otherwise specifically stated.

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US ARMY PROCUREMENT RESEARCH OFFICE
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EXECUTIVE SUMMARY

A. BACKGROUND AND PROBLEM. Voluminous data is acquired to support Department of Defense weapons and other purchased hardware. The expense of data involves acquisition and management costs. Procurement and Production officials have concluded that data costs are on the rise and corrective action is necessary to overcome this potentially serious problem.

B. OBJECTIVES. Assess contract data management policies, evaluate contract data management practices, and develop improved contract data management procedures.

C. APPROACH. Survey studies and guidance to develop a normative data management policy model. Visit and interview data management officers, program management officials and policy-makers to determine current practices and advance an operational practices model. Conduct a comparison of the policy and practices models. Formulate policy and practice recommendations to reduce the expense of data acquisition and management.

D. CONCLUSIONS AND RECOMMENDATIONS. Excessive, redundant, and deficient data requirements may be reduced or identified through the use of a Data Requirements Checklist (Appendix E). Determination of data adequacy may be improved by instructing contractors to deliver data products to the technical office specified on the contract data requirements list. Specifications, drawings, technical publications, and computer programs should be separately priced on almost all government contracts because of their importance to the government. Data management training should be strengthened. Data subject commonality among contracts is sufficient to study the feasibility of developing generic data item descriptions. The amount of data required is being forced upward because of current acquisition policy.

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ABBREVIATIONS AND SYMBOLS

AR.....	Army Regulation
CDRL.....	Contract Data Requirements List
DA.....	Department of the Army
DARCOM.....	Army Materiel Development and Readiness Command
DF.....	Disposition Form
DID.....	Data Item Description
DMO.....	Data Management Officer
DOD.....	Department of Defense
DRRB.....	Data Requirements Review Board
MSC.....	Major Subordinate Command
OMB.....	Office of Management and Budget
OPR.....	Office of Primary Responsibility
PCO.....	Procuring Contracting Officer
PM.....	Program/Project Manager
PMO.....	Program/Project Management Office
SOW.....	Statement of Work

CHAPTER I

INTRODUCTION

A. BACKGROUND.

Voluminous data is acquired to support weapon systems and other hardware purchased by the Department of Defense (DOD). Not only is the data expensive in contract costs, it creates additional cost and management problems once it is accepted by the government.

Recognition of this problem was manifested in 1976 when the Office of Management and Budget (OMB) directed agencies to undertake a new approach to major system acquisitions (Circular A-109, dated 5 Apr 76). Although data acquisition was not its major thrust, the circular did highlight that "Each agency should preclude . . . placing nonessential . . . paperwork requirements on program managers and contractors." Initiative 17 of the April, 1981 set issued by the Deputy Secretary of Defense stated "Decrease . . . Data Requirements . . ." In September of 1982, at the Army Materiel Development and Readiness Command (DARCOM) Procurement and Production Directors Conference, officials concluded that the cost of data continues to grow and that some determination of the causes was needed.

The purpose of data is to inform; and, as a consumer, the DOD uses data to develop supportable positions on many decisions. However, to develop any position, a decisionmaker must balance the risk of not having data and needing it against having data and not needing it relative to cost.

Two related studies were in progress at the beginning of this research. Under Secretary of Defense DeLauer is sponsoring a multiservice-contractor study to reduce contracted data requirements and improve DOD policy. DARCOM was studying the value of data requirements imposed on contractors by data item descriptions (DID's). The DeLauer sponsored study has been completed

and the resulting five recommendations are being considered for implementation (see page 485 of the 1983 Federal Acquisition Research Symposium proceedings). The DARCOM study is continuing.

This research differs from other studies in that it examines the origins of data needs and the process of developing a contracted data requirement. In addition, special attention is given to production factors.

B. OBJECTIVES.

The objectives of this study are:

1. assess contract data management policies and procedures;
2. evaluate contract data management practices; and
3. develop improved contract data management policies and procedures.

C. SCOPE.

This research was conducted in three stages, one stage for each objective. The effort was confined to data acquired through contract data requirement lists (CDRL's) of systems engaged in full scale development or production. Commands, System offices, and Major Subordinate Commands (MSC's) participated in this study. Patent, copyright, and proprietary data issues are not addressed. Systems involving several types of commodity were examined to support the validity of the results. In appreciation of the magnitude of the information sources (contracts, Commands, MSC's, and installations), sampling was employed.

D. APPROACH.

Stage One commenced with a survey of studies (both past and present) and data management policy (provided in circulars, directives, regulations, and instructions). From these documents, a normative guidance model (to include relationships, responsibilities, etc.) was developed. The model, together

with insights and experience from current DOD and DARCOM studies, served to supplement the preparation of an interview survey for Stage Two.

Stage Two examined current operating practices at MSC's and Program/Project Management Offices (PMO's). Particular attention was given to those practices that efficiently met the intent of the guidance. Attention was also given to the resource expenditures experienced in the generation, handling, and application of "necessary" data. PMO and MSC contracts, policy documents, and interviews were used to accumulate an operational experience file. Experience files provided the data base to construct an operational experience model and conduct comparative analyses for Stage Three.

Stage Three compared operating practices and policy. Five representative contracts were examined in terms of data requirements and costs. Measures of utility, category and service distributions, and commonality were formulated to assess data requirements. Costs were investigated in terms of contract price and service distribution. By sorting through the service distribution and judging what was "necessary," a cost reduction target was identified. From the contract analyses, documented policies, and observed practices, constructive conclusions and recommendations were reached which, when implemented, will enhance data management policies and procedures.

E. CONCEPTUAL FRAMEWORK.

Data management does not enjoy the structure or discipline established in some of the other governmental management functions such as procurement or quality control. Its age as a management discipline is relatively short. Knowledge of its intricacies are not widely held. And, relatively little research or explanation has been brought to bear on it. Accordingly, it is necessary to construct a framework or logic for presenting the analysis

performed in this study. Three models or structures are employed in Chapters II, III, and IV for conveying this logic. First, in Chapter II, a static (normative) model of the policy process is presented to depict the official prescriptive set of organizations, authorities and objectives. Secondly, Chapter III describes a dynamic (operational practices) model which depicts the actual operation of the system. Finally, in Chapter IV, the interactive relationships between the two foregoing models and their elements are described. Here the locus of opportunities for data management system improvements were identified.

CHAPTER II

DATA MANAGEMENT POLICY

A. INTRODUCTION.

Command directives, instructions, regulations and standing operating procedures provide guidance for implementing and executing data management practices. The summation of their contents represents a normative (static) guidance model. Figure 2-1 was prepared to facilitate understanding the model structure. It identifies the specific policy documents and responsible organizations involved in DOD data management. The model includes those documents published for general distribution. Letters, messages, or other communications that may have influenced policy implementation were not included because of their unique applications.

B. DEPARTMENT OF DEFENSE.

Two DOD documents establish uniform policies for data acquisition and administration. One is a directive (DODD 5000.19, Policies for the Management and Control of Information Requirements, dated 12 March 1976), and the other is an instruction (DODI 5010.12, Management of Technical Data, dated 5 December 1968). Together these documents outline the procedures that have resulted in the implementation and maturity of contemporary data management practices.

1. DODD 5000.19 (especially enclosure 5). This directive places control on the inception of data requirements by setting forth the consideration of cost in relation to use, and the need for an evaluation of penalties and risks of not having data available. To make the decision process clearer, DOD users are directed to encourage offerors to propose their internal management system outputs as substitutions for data requirements in solicitations. Requirements are to be specified in terms of desired output rather than the methods employed

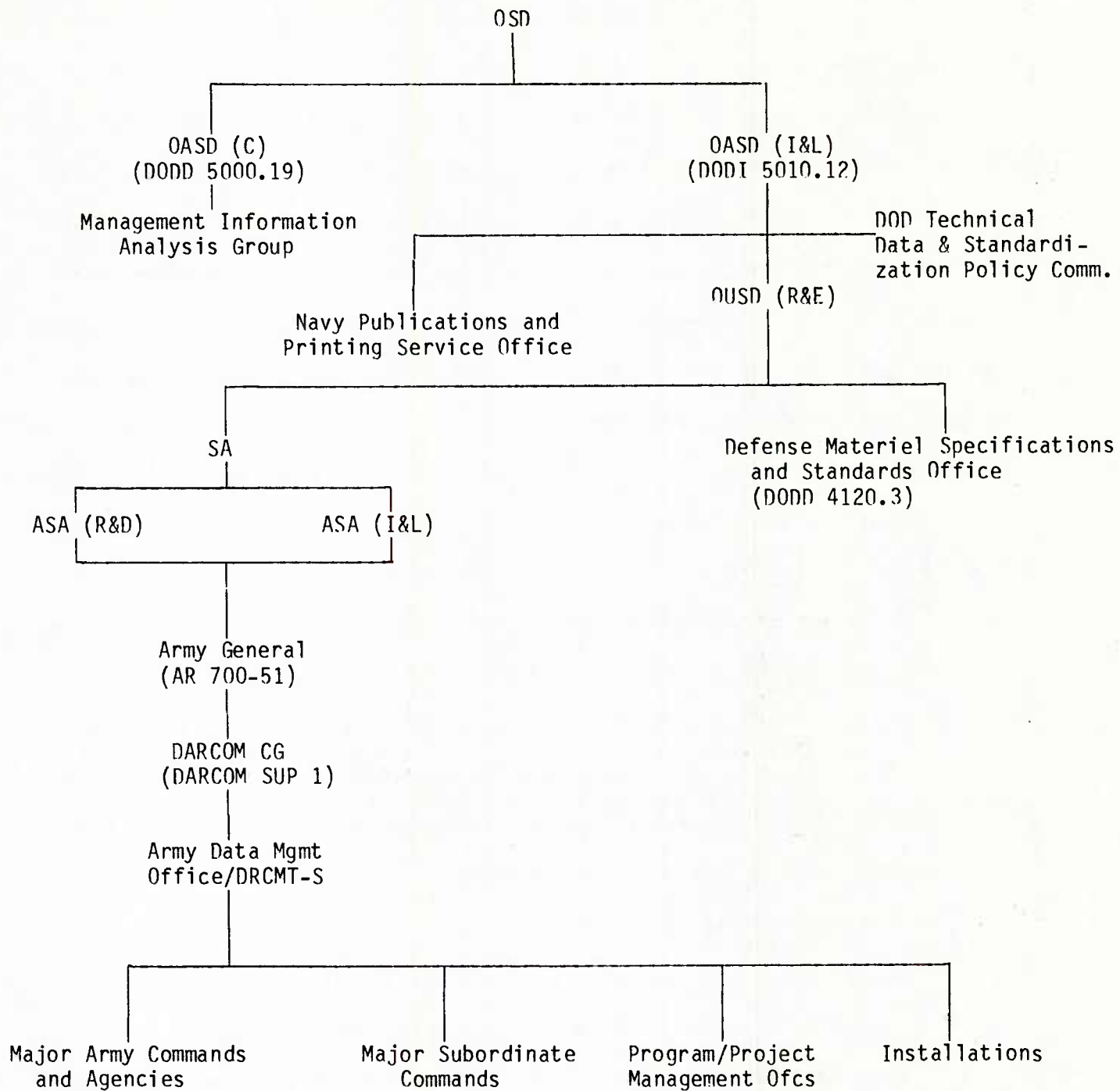


FIGURE 2-1. NORMATIVE GUIDANCE MODEL STRUCTURE

to meet it, delivery schedules shall be consistent with effort, and initial requirement definitions shall be selected from the Acquisition Management Systems and Data Requirements Control List (DOD 5000.19L, Vol. II). Costs will be predicted by the user or obtained from offerors, and continued need and awarded costs shall be revalidated subsequent to contract award. All changes to approved data item description (DID) requirements shall be further approved by the OMB. The Management Information Analysis Group is also chartered to assess the adequacy of criteria and procedures of DOD Components when placing data requirements on contractors, approve DID's for DOD use, and resolve industry/government problems (see Figure 2-1).

2. DODI 5010.12. This instruction emphasizes the selection and administration of data to be contractually acquired and establishes data management procedures. Users are instructed that in consideration of planned and probable future use, sufficient data shall be acquired and made available to all users to permit effective support of all DOD functions. Instructions for attention to spare parts, design disclosure, procurement data packages, and data rights are also provided. The concepts of deferred ordering and deliveries are introduced along with special attention to assuring data quality.

The Technical Data Requirements Review Board, Technical Data Management Office, and Technical Data Management Officer functions are introduced. The Technical Data Requirements Review Board is comprised of appointed functional or organizational representatives, who validate data requirements in their area of speciality, and assist the Board Chairman in integrating total contract data requirements for all programs estimated to cost the DOD \$1,000,000 or more. The Technical Data Management Office is an organizational element, at any level of a DOD component, which serves as the central focal point for data management.

The Technical Data Management Officer is an individual designated by responsible authority to assist and advise in applying data management principles.

To bring about greater uniformity and commonality among DOD Components, the Data Management Improvement Program was implemented as a part of the DOD Technical Data and Standardization Policy Committee Charter (See Figure 2-1).

C. DEPARTMENT OF THE ARMY (DA).

Data management for the Army is addressed in Army Regulation (AR) 700-51 (Army Data Management Program, dated 28 February 1973). AR 700-51 assigns DARCOM responsibility for Army data management, and directs the application of data management to all data acquisition regardless of program dollar value. Major guidance includes: data products beyond "end product" (combat hardware) drawings and specifications are extraneous; essential inspection and test equipment data may be acquired under limited conditions; and all other data requirements should be strongly justified. In addition, special guidance is provided for design disclosure when competitive reprocurement is anticipated, and procedural instructions are given for securing and maintaining DID's.

D. ARMY MATERIEL DEVELOPMENT AND READINESS COMMAND.

DARCOM supplemented AR 700-51 to provide detailed implementing policy to subordinate data procuring activities. Specific requirements are:

1. designation of data management officer (DMO) responsibilities,
2. data requirements review board (DRRB) procedures,
3. semiannual data managers meetings,
4. annual data reviews,
5. data item justification and approval processes, and
6. management information submissions to DARCOM.

The supplement augments DOD policy by limiting the terms technical DMO to DMO, technical DRRB to DRRB, and introducing data manager (not previously identified). A data manager is the individual assigned to accomplish the data management mission in any functional element. The data manager is the focal point for data within the respective functional areas, whereas the DMO has data management responsibilities across all functional areas. DMO responsibilities are itemized and provided in Appendix A. DRRB procedures are outlined in Appendix B. Semiannual data manager meetings are to be held by the Army DMO (at DARCOM) and represent the forum at which subordinate activities can take issue with policy, share problems of administration, and gain insights to new concepts. Annual data reviews constitute the self-examination process whereby each activity can seek out problems and effect solutions. Newly composed and revised data items (selected for CDRL inclusion) are to be justified on an AMC Form 1484 by the user and forwarded to the Army DMO (at DARCOM) for approval. DMO information, annual data review findings, new and revised DID's, and CDRL's are submitted to the Army DMO.

E. SUBORDINATE ACTIVITIES.

A subordinate activity generally documents local policy by supplementing AR 700-51 and preparing organizational operating instructions to assign responsibilities, outline procedures, and stress management objectives. Upon close examination, these documents depart slightly from higher echelon administrative policy by relabeling particular positions (Figure 2-2) to distinguish between various levels of management and establish limits to assigned responsibilities. At some MSC's for example, the DMO and data manager labels have been replaced with Command DMO and functional DMO. The Command DMO is the individual designated by the Commander to apply data management principles across all functional

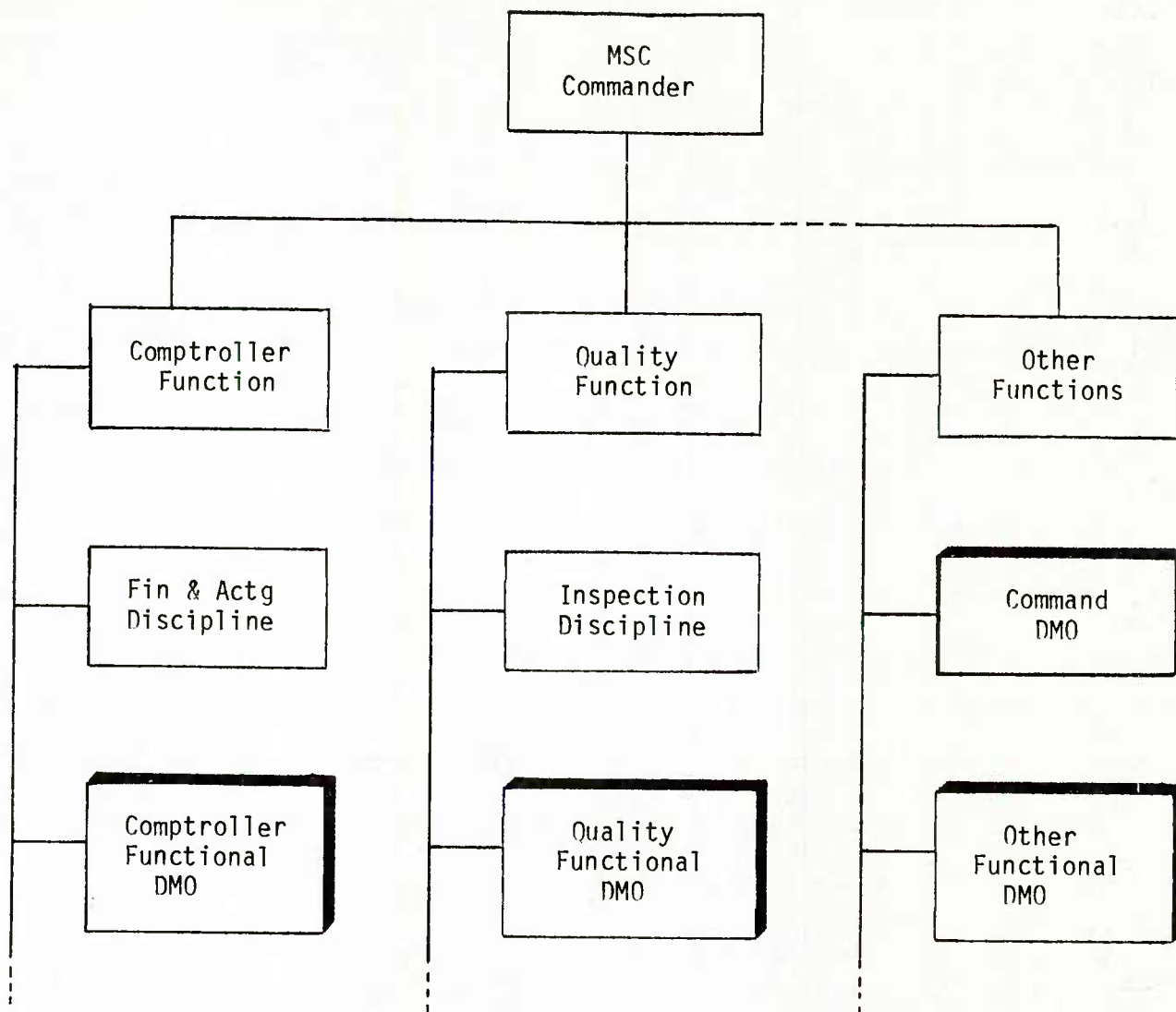


FIGURE 2-2. ORGANIZATIONAL POSITION OF DMO'S AT MSC'S

areas of the Command. The functional DMO is the individual designated (sometimes on an "other duties as assigned" basis) by the functional head (deputy, director, chief, etc.) to apply data management principles across all disciplines within the functional area. Because the Data Management Office is not a staff office, some MSC's have the Command DMO (Figure 2-2) organizationally

placed in a technical function (engineering, development, etc.). However, there are cases where the Command DMO is being considered for placement in other functions (management information systems, quality, etc.) Some MSC's have Command DMO staffs to assist buyers in preparing their data requirements and securing DRRB approval. Local policies have been developed to manage multi-Service (more than one military department or government agency participation) and directed one-time procurements. Directed one-time procurements involve the formation of ad hoc contract preparation and award teams.

Program/Project Management Offices (PMO's) generally operate under the guidance of upper echelon policy. They maintain the DMO and conduct independent (of local MSC or subordinate activity) DRRB's. Some of these DMO's have developed policies to manage multi-Service and joint PMO procurements. For the purpose of this study, joint PMO management involves the co-development of two or more combat capabilities (communications and tanks for example) within the same military service. Functional DMO's and staff personnel may also exist, but not necessarily in a formal sense.

Two offices have not been previously discussed; the Naval Publications and Printing Service Office, and the Defense Materiel Specifications and Standards Office. The Naval Publications and Printing Service maintains and distributes approved DID's at the Naval Publications and Forms Center in Philadelphia. The Defense Materiel Specifications and Standards Office assures that specifications, standards, handbooks, engineering drawing, and other documents are prepared and maintained to meet essential requirements (DODD 4120.3, Defense Standardization and Specification Program dated 10 February 1977) which includes the AMSDL. Major Army Commands, Agencies and Installations were not within the scope of this study.

CHAPTER III

DATA MANAGEMENT PRACTICES

A. INTRODUCTION.

Data management policy defines the general goals and acceptable procedures to guide and determine present and future decisions. In general, the practitioner has been instructed to secure only necessary data, through the application of a DID and CDRL procedure, with the review and approval of interested parties. Three devices are used for describing data management practices: areas, practitioners, and procedures. The areas of data management include Major Army Commands and Agencies, MSC's, PMO's, and installations (from Figure 2-1). The practitioners are the data managers who assist in preparing solicitations, selecting the contractors, and awarding and administering the contracts. The procedures are the practices which must be executed by the practitioners (within their area) to employ the policy. The summation of this description can be called an operational practices (dynamic) model.

B. DATA MANAGEMENT AREAS.

MSC's and PMO's were chosen as the management areas because the bulk of data management activity takes place there. Knowledge that the MSC's operated under what might be termed program and nonprogram organizational structures provided sufficient reason to combine MSC program operations with PMO operations and discuss program data management. The major differences between MSC program and PMO operations is their dollar value, and MSC programs have some matrixed personnel. Nonprogram data management may include early development research, off-the-shelf procurements, and directed buys, hence the two areas of program and nonprogram data management.

1. Program. Program data management is highly centralized and characterized by heavy workloads during solicitation preparation and contract award. The program data manager must develop the procedures and enforce policy guidance to assure valid integration of data requirements into the statement of work (SOW). Internal coordination, which may occur as often as four or five times, combined with external coordination (including both command and other government support) must be accomplished at the same time as the administration of ongoing contractual efforts. Because of the moderate size of program offices, program data managers are able to dispense with more formal communication techniques and interface one-on-one with those functional disciplines normally responsible for generating data requirements. DRRB's are normally very rigorous and may be preceded by several informal meetings before formally convening, but assumptions based on program familiarity can degrade their effectiveness. After participation in source selection and contract award, the program data manager must develop a CDRL delivery summary which relates data products, addressees and time. This includes provisions for tracking data product inspection and acceptance or rejection and establishes a standard from which delinquent deliveries can be noted. Data managers must also formally apprise the contractor, through the contracting officer, of delinquent deliveries.

2. Nonprogram. Nonprogram data management is less centralized and has a more uniform workload over time. The Command DMO must develop procedures that apply equally to each phase of the life cycle for a variety of materiel acquisitions. To support the variety of acquisitions, some MSC's have subdivided nonprogram data management resources into Development and Readiness staffs (Figure 3-1). The Development staff responds to concept exploration, demon-

stration and validation, and full-scale development cadre requests for data management assistance. The Readiness staff responds to production and deployment, and commodity manager's requests for data management assistance. These staffs perform the same types of integration as program data managers, however more formal coordinations are conducted with functional DMO's (figure 2-2) and offices of primary responsibility (OPR). Occasionally staff members will participate in source selection and contract award. After the contract is awarded, or DRRB approval is secured for a non-source selection buy, the staff members are normally assigned to another data management task, and data management responsibilities shift to the managing OPR.

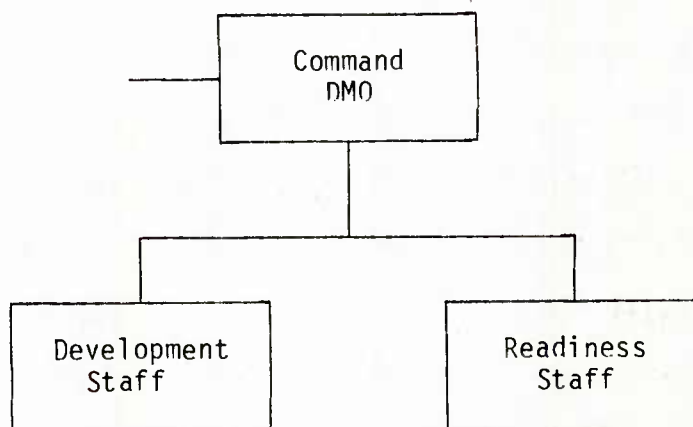


FIGURE 3-1. COMMAND DMO DEVELOPMENT AND READINESS STAFFS

C. DATA MANAGEMENT PRACTITIONERS.

For the purposes of this study, there are eight generic practitioners who drive the data management program. The interdependence of these practitioners is such that the absence of one could disrupt all attempts at data management. They are the:

1. acquisition action OPR,
2. Command DMO,

3. Program DMO,
4. Command DMO staff,
5. Functional Heads,
6. Functional DMO,
7. Functional disciplines, and
8. Other Government participants.

The acquisition action OPR has the inherent responsibility of initiating the data management process by contacting the Command DMO or the Program DMO. This person may be the Program Manager (PM), the Procuring Contracting Officer (PCO), or any individual responsible for executing an acquisition action.

The Command DMO accepts the data-call request from the OPR and is responsible for assigning the request to the appropriate staff element (development or readiness), serving on and sometimes chairing the DRRB for that request, and providing the results of the data-call request to the OPR. This person is normally appointed by formal letter from the commander, and may, or may not, have other responsibilities.

The program DMO accepts the data-call request from the OPR and is responsible for all tasks related to the data-call. This person is selected by the PM, devotes full time to data management, and may have a supporting staff.

The command DMO staff is composed of individuals who receive and execute data-call requests from the command DMO. They issue the data-call to functional DMO's and work with OPR's to compile and coordinate the solicitation in preparation for the DRRB. Command DMO staff are selected by the command DMO.

Functional heads are directors, or highly knowledgeable representatives, of the functional elements of a command or program office who serve on the DRRB

to determine the validity and acceptability of proposed data requirements. Their collective decision can determine if data requirements are adequate and acceptable, inadequate and acceptable with corrections, or inadequate and unacceptable.

Functional DMO's are appointed by their respective functional heads and may have functional discipline responsibilities. They receive data calls from the Command DMO staff and issue a functional data call to each functional discipline within their organization. All responses are consolidated and returned to the requesting command DMO staff. Large PMO's may have functional DMO's.

Functional disciplines prepare the SOW provisions, specify the data requirements, and support the internal coordination of consolidated documents. They may also prepare instructions for proposal preparation, source selection criteria, perform source selection evaluations, and administer awarded contract efforts in the program and nonprogram areas. The results of their efforts are normally approved at the section, branch, and division supervisory levels as they are returned to the functional DMO.

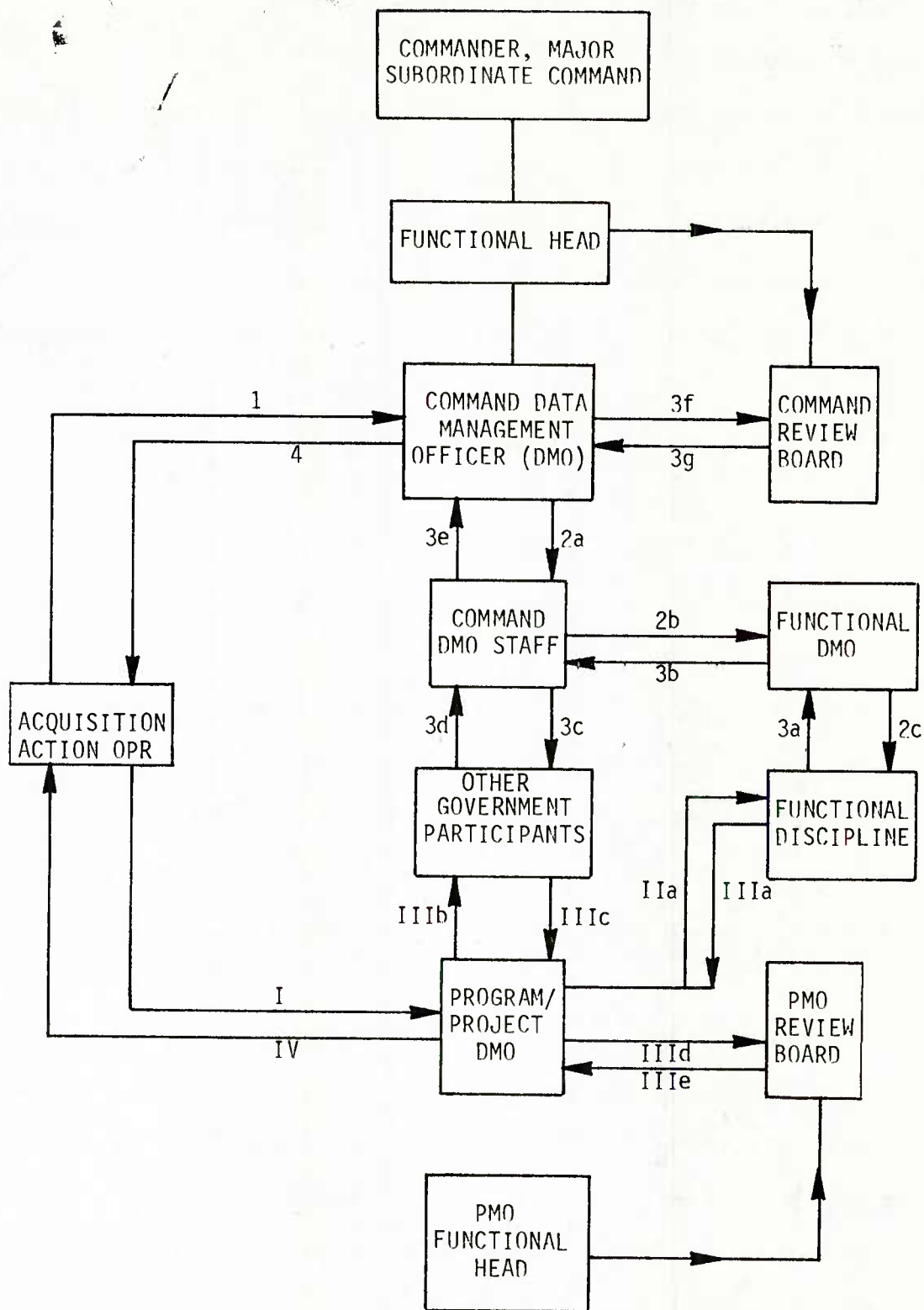
Other Government participants are functional elements which are organizationally external to the PMO or MSC and will provide a service or facility (testing, training, contract administration, etc.) to the PMO or MSC as a part of the contracting effort. Participants customarily receive a draft SOW and a request to critique the tasking and data requirements for completeness within a limited period of time. They may also be requested to (a) attend a SOW workshop at the PMO or MSC to integrate their specific requirements, or (b) to reply (in writing) with their findings and necessary data requirements.

D. DATA MANAGEMENT PROCEDURES.

The data management process is carried out in six sequential procedures. They are: request data call, issue data call, execute data call, answer data call, participate in source selection, and administer data receipts. The first four procedures address the preparation of a solicitation which can take from three weeks for simple readiness buys to six months for complex development buys. Figure 3-2 illustrates, in summary, the operational practices model that relates the areas, practitioners, and flow sequence of the first four procedures. The numerals refer to the procedure and the lower case letters to the sequence which is referenced within the text. A more detailed description of the six procedures, (structured in a guidance format) can be found in Appendix B.

1. Request data call. The starting point of data management begins with a discussion between the PM and PCO. The result of this discussion is a request to the DMO to conduct a data-call. The request is normally in the form of a Disposition Form (DF, DA Form 2496) and should have sufficient attachments to describe the nature and scope of the proposed acquisition (I & 1 of Figure 3-2).

2. Issue data-call. The data-call is issued by the PMO or command DMO. The Command DMO assigns this responsibility to a staff member (2a of figure 3-2) who prepares a transmittal DF through all local function heads to each functional DMO (2b of Figure 3-2). The functional DMO prepares a transmittal DF to each functional discipline (2c of Figure 3-2). The PMO DMO prepares a DF to each functional discipline (IIa of Figure 3-2).



Legend: Roman numerals: Program
 Arabic numerals: Nonprogram

FIGURE 3-2. DATA MANAGEMENT AREAS, PRACTITIONERS AND FLOW SEQUENCE

3. Execute data-call. Program and nonprogram functional disciplines prepare SOW provisions, determine data requirements, and conduct internal evaluations of the proposed tasking. Program functional disciplines may also prepare instructions to offerors and source selection criteria. SOW provisions and data requirements are then forwarded to the program DMO and functional DMO's (IIIa & 3a of Figure 3-2). Functional DMO's compile all functional requirements and forward them through their respective functional heads to the DMO staff member (3b of Figure 3-2). PMO and staff DMO's (with assistance from the PM and PCO) combine all inputs into a draft SOW with a CDRL. If a data requirements workshop is not held, a transmittal letter is prepared, attached to the internally coordinated draft of the SOW (with CDRL's), and forwarded to all Government participants (3c and IIIb of Figure 3-2). Government participants critique the SOW, add their office symbols to desired data items, and forward their contract provisions and data needs to the DMO (3d and IIIc of Figure 3-2). With DMO receipt of these documents, the provisions are distributed to the functional disciplines for coordination and integration, and CDRL distributions are revised. With the final internal coordination completed, a distribution address list is prepared, and the complete procurement package is made ready for the DRRB. Staff DMO's forward the procurement package to the Command DMO with a formal request for a DRRB (3e of Figure 3-2). Command and PMO DMO's prepare a copy of the procurement package for each review board member and distribute them by DF to the membership. The DF informs the membership of the time and place (normally about ten working days in advance) of the DRRB. At the appointed time, the PM, PCO, staff DMO, Command and PMO DMO's meet with their appropriate DRRB's (3f and IIId of Figure 3-2). During the DRRB minor discrepancies and deficiencies are identified for correction.

All errors are corrected by the originating functional discipline in conjunction with the staff, or PMO DMO. Final packages are returned to the review board chairperson for final approval.

4. Answer data call. With approval of the final package, a transmittal DF is prepared and forwarded with the package to the requesting OPR (4 & IV of Figure 3-2).

5. Participate in source selection. Program DMO's are normally a part of the source selection team. They are usually responsible for evaluating factors in the management area. Therefore, DMO's may also prepare instructions for proposals and source selection criteria, and conduct evaluations of proposals. Command staff DMO's are formally requested to participate in source selections.

6. Administer data receipts. With the award of the contract, the PMO DMO receives a copy of the signed contract and begins to formulate and construct a "delivery schedule" of the data requirements. The PMO DMO then begins to monitor deliveries, determine acceptability by the recipient, and informing the contractor of delinquent deliveries. The PMO DMO also assists the PCO in determining equitable adjustments for contract modifications involving data.

CHAPTER IV

COMPARATIVE DATA MANAGEMENT

A. INTRODUCTION.

Data management involves the balancing of the interaction between policy and performance. In preparing policy, experience and assumptions provide the basis from which desired management controls are established. These controls govern the performance of the practitioner in such a way that management can revise policy and insure optimum performance. That is the purpose of this chapter, to investigate performance and discuss the strengths and weaknesses of policy.

B. PERFORMANCE.

To establish the results of policy implementation, it is necessary to identify the resources used to apply the policy and measure the performance of those resources. Through performance measurement, improved policies can be tested and implemented.

The resources of data management are people, management systems, skills, and time. The interaction of these resources produce contracted data requirements and costs which are used here as the measures of performance. After the introduction of a data base, contracted data requirements and costs are discussed to determine if there is a need for the development of a checklist. It was assumed that Data Requirements Checklist could guide buying activities in determining excessive, redundant and deficient data requirements.

1. Data Base. The data base for the measurement of performance demanded careful consideration. It had to meet the following criteria: (a) be consistent with the policies and practices already described, (b) represent a cross-section of the total population, and (c) offer the greatest potential payoff

for a yet to be justified checklist. Separately priced CDRL items within each contract was also considered highly desirable. Therefore, active program and nonprogram contracts were selected which had the best representation of maturity, price, management, system and technology (Table 4-1).

TABLE 4-1. CONTRACT PROFILES

CONTRACT		AWARDED	PRICE	MANAGEMENT	SYSTEM	TECHNOLOGY
A	FSD	Dec 81	\$386.2M	Multi-Service	Combat	New
B		Sep 81	186.8M	Single PMO	Combat	Up-Grading
C		Mar 82	52.9M	Joint PMO	Combat	Combining
D	PROD	Nov 82	24.5M	Single PMO	Non-Combat	Off-the-Shelf
E		Mar 81	4.3M	Ad Hoc	Non-Combat	Off-the-Shelf

An explanation of the terms joint PMO, up-grading, and combining may provide a clearer understanding of the nature of the data base. Joint PMO management is the concurrent management of a single system by two or more PMO's within the same military service. When joint PMO's are formed, their technologies are normally combined and sometimes new technologies may be added. An up-grading technology involves the modification of an existing system.

2. Contracted Data Requirements. Data requirements are used by government personnel to assist in preparing a system for deployment and to monitor contract performance. They are the CDRL items that normally appear in one or more of the exhibits of a government contract. The CDRL item states the requirement in terms of when and who is to receive what data. The data product is specified by a DID number and title which is a separate document that instructs the contractor on the specialty of the data.

Many historical studies have examined the arrival time of data requirements and have concluded that delivery schedules play a key role in program management. This study builds on past studies by accepting their conclusion and examining the subjects of utility, specialty, commonality, and distribution.

a. Utility. Utility is the method of specifying DID's on a CDRL. A DID can be specified as it was originally approved (as printed), altered (tailored, or amended) to meet a specific need, or as a one-time (sometimes called unique) requirement when no published DID meets the requirement. Unnumbered DID's are defined to be errors of specifying CDRL items. A CDRL may contain many items with the same DID number. This practice, developed by the buying activities, of altering a DID to meet more than one requirement is identified in Table 4-2 as Repeat DID's. Some of the repeated DID's are identified in Appendix C. The examination of data requirement utility was made to determine something about the strength of altering and updating policies.

TABLE 4-2. DATA REQUIREMENT UTILITY

MATURITY CONTRACT	FSD			PROD		CDRL ITEMS
	A	B	C	D	E	
as printed	51	62	68	2	0	183
altered *	81	36	33	22	24	196
one-time	28	0	0	0	0	28
not numbered	0	0	5	1	0	6
CDRL ITEMS	160	98	106	25	24	413
REPEAT DID'S	2	29	18	11	12	72
* = tailored, amended, etc.						

The results (Table 4-2) indicate that:

(1) full scale development users appear to have the greatest utility (49.7%, 181/364) for "as printed" CDRL items,

(2) production users appear to have the greatest utility (93.9%, 46/48) for altered CDRL items,

(3) full scale development users appear to have the greatest utility (7.7%, 28/364) for one-time CDRL items,

(4) both production and full scale development users appear to have low utilities (2.0% and 1.4% respectively) for unnumbered DID's as CDRL items, and

(5) production users appear to have greater utility (44.9%) for repeat DID CDRL items (The utility measure for repeat DID CDRL items by production users was adjusted for unexecuted contract options). This accounts for the lower percent than that provided by Table 4-2 values: 46.9%, 23/49.)

The relatively low utilities of "as printed" DID's (for contracts D and E), and "one-time" DID's (for contracts B, C, D and E) point out the need for Air Force Institute of Technology training in the Defense Data Management Course (PPM 370). Also, there appears to be a need to enhance the DRRB process, because of the utility of unnumbered DID's.

b. Speciality. The category of the data requirement, or the service provided to a data user, shall be the speciality of a data requirement for the purposes of this study.

(1) Category. The term category refers to the eleven data functional categories defined in the Assistant Secretary of Defense Memorandum of 7 July 1969 (provided in Appendix D). Each data functional category has a letter code identifier which appears as the center character in the three

character groups of a DID number (for example: DID-P-3460, "P" is the data functional category code). The codes and corresponding data functional category titles are:

- (a) A: administrative/management,
- (b) E: engineering and configuration documentation,
- (c) F: financial,
- (d) H: human factors,
- (e) L: logistic support,
- (f) M: technical publications,
- (g) P: procurement/production,
- (h) R: related design requirements,
- (i) S: system/subsystem analyses,
- (j) T: test, and
- (k) V: provisioning.

To establish the concentration of requests for data, CDRL items for each contract were tabulated (Table 4-3) on the basis of these Data Functional Categories. From the table, it can be observed that as a system matures, data requests can be expected to decline substantially. Sample full scale development contracts appear to have the greatest demand for data functional categories E, R and S. And, sample production contracts seem to have greater demand for data functional categories M and V.

TABLE 4-3. CATEGORY REQUEST DISTRIBUTION (CDRL ITEMS)

CONTRACT		DATA FUNCTIONAL CATEGORIES											TOTAL
		A	E	F	H	L	M	P	R	S	T	V	
F S D	A	16	29	6	10	13	8	6	23	29	13	7	160
	B	5	18	7	18	5	20	4	9	6	5	1	98
	C	5	26	6	11	5	4	0	19	13	9	8	106
P R O D	D	1	1	1	2	1	7	0	0	3	1	8	25
	E	2	1	2	2	2	6	0	0	2	1	6	24
TOTAL		29	75	22	43	26	45	10	51	53	29	30	413

(2) Service. The specialty of service for a data requirement relates to the formating, structure and anatomy of data provided in answer to a CDRL item. Service differs from category in that category relates to primarily the functional discipline of the office responsible for preparing the DID, and service bridges across categories to characterize common data products.

In consideration of the fact that functional categories appear to be experiencing some dilution (new DID's being assigned to questionable categories), the author first chose six service groups to conduct specialty analysis. They are:

- (a) drawings,
- (b) specifications,
- (c) requests,
- (d) lists,
- (e) plans, and
- (f) reports.

Preliminary analysis of these six service groups proved ineffectual; therefore, the 14 service groups of Table 4-4 were developed by expanding five of the original six service groups. The distinction between program and management plans is (a) program plans apply to the system (such as a Support Equipment Plan), and (b) management plans are administratively for the system (such as a Contract Work Breakdown Structure).

TABLE 4-4. SERVICE REQUEST DISTRIBUTION (CDRL ITEMS)

SYSTEM MATURITY	FSD			PROD		TOTAL
CONTRACT	A	B	C	D	E	
Drawings	2	1	4	3	2	12
Hardware Specifications	6	2	3	0	0	11
Software Specifications	6	2	2	0	0	10
Change Proposals	5	0	3	1	0	9
Waivers and Deviations	3	0	1	1	1	6
Data Accession List	1	1	0	0	0	2
Test Plans	12	3	5	0	0	20
Program Plans	14	12	9	1	1	37
Management Plans	15	9	9	0	0	33
Test Reports	9	3	5	2	1	20
Status Reports	27	19	19	4	4	73
Study Reports	57	44	44	13	15	173
Meeting Agenda	1	1	1	0	0	3
Meeting Minutes	2	1	1	0	0	4
TOTAL	160	98	106	25	24	413

Table 4-4 indicates that there may be an excess in the drawings group for contract C (in full scale development) and contract D (in production). An investigation of the requirements of contract D revealed no excessive needs. An investigation of contract C revealed the need for level 3 drawings, a level 2 technical data package, a level 3 technical data package, and a computer program configuration. The level 3 drawings appeared to be reasonable. The computer program configuration also appeared reasonable in spite of the Defense Acquisition Regulation definition of computer programs (they are not data). Some difficulty was encountered in understanding the level 2 and level 3 technical data package requirements. The concept of levels of technical data packages may be desirable, but published regulations and guidance documents provide no evidence of a level of technical data packages. Also, the definition of a technical data package given in AR 310-25 (Dictionary of United States Army Terms dated 15 September 1975) states that a technical data package ". . . will consist of . . . plans, drawings and associated lists, specifications, . . ." Therefore, this could be judged to be an example of excessive data requirements.

Contract B has no change proposals or waivers and deviations requirements. Noting that the other contracts have at least waiver and deviation provisions, and that contract B involves technology upgrading (Table 4-1), the presence of some sort of contract variation requirement could almost be anticipated. Hence, contract B may have a data deficiency.

Contract A has more test plan requirements than test report requirements. Investigation showed that there was a one-to-one correspondence between seven of the test plans and reports. Two test reports were required that had no planning documents, and five test plans were to be prepared without reporting

results. Within the seven "desirable" requirements, two were judged redundant. Therefore, contract A appears to have excessive, deficient, and redundant requirements.

Program and management plans and status and study reports comprise 75.8 percent of the total requirements. The reason for this high demand seems to be a directed practice of DOD contracting. Each functional discipline (Training, Quality, Safety, etc.) generally tasks the contractor to develop some sort of plan (program or management) to be delivered early and executed during the life of the contract. The functional discipline may also task the contractor to develop test plans (Engineering Design, Integration, Human Engineering, Electromagnetic Compatibility, Reliability and Maintainability Demonstration, etc). After delivery of the plans, the functional discipline must now measure how well the contractor is performing his plan. Therefore, the functional discipline also tasks the contractor to submit periodic status reports (Program Schedules, Contract Fund, Contractor Cost, etc.), to prepare agendas for scheduled conferences, and to record minutes for all meetings. This is evidenced by a comparison of the sum of program and management plans to the sum of status reports, agendas and minutes requirements (under FSD) in Table 4-4 (68 to 72). To formally document test results and summarize effort achievements, functional disciplines will almost always task the contractor to prepare test and study reports. This is supported by the fact that the number of test plans is equal to the number of test reports (20) in Table 4-4. One reason the number of study reports is high (173) is that some functional disciplines may be more mature than others. Knowing the nature of the expected results and knowing that the method of achieving the results has little impact, mature functional disciplines may request final lists (Common items, Long

lead items, etc.) and study reports (Depot Maintenance, Transportability, etc.) without the need for plans and status reporting.

The analysis of the service of contracted data requirements indicate a need to overcome excessive, deficient and redundant data requirements being imposed on contractors. Also directed DOD contracting procedures seem to require functional disciplines to task contractors to perform under controlled constraints (plans and reports) to assure milestone transition readiness.

c. Commonality. Commonality is the common sharing of CDRL items among two or more contracts. This inquiry of commonality is being made to assist the development of a data requirements check list. Commonality will be examined in terms of total data base and the level of system maturity.

When all five contracts were compared, only the Technical Manual Plan (DID-M-6154) appeared in each contract. Four CDRL items were common to four of the five contracts. Technical Manuals/Commercial Literature (DID-M-6153), and Technical Manual Status and Schedules (DID-M-6155) did not appear in Contract A. Scientific and Technical Reports (DID-S-4057), and Supplementary Provisioning Technical Documentation (DID-V-7000) did not appear in Contract E.

The contracts were grouped by level of development (Figure 4-1) to better facilitate the interpretation of data. From Figure 4-1(a) it is seen that 16 CDRL items are common to all three full scale development contracts. Contracts A and B have 12 common CDRL items. Contracts B and C have 14 common CDRL items. And, contracts A and C have 13 common CDRL items. Appendix C provides the identification numbers of those CDRL items which have some degree of commonality among these five contracts.

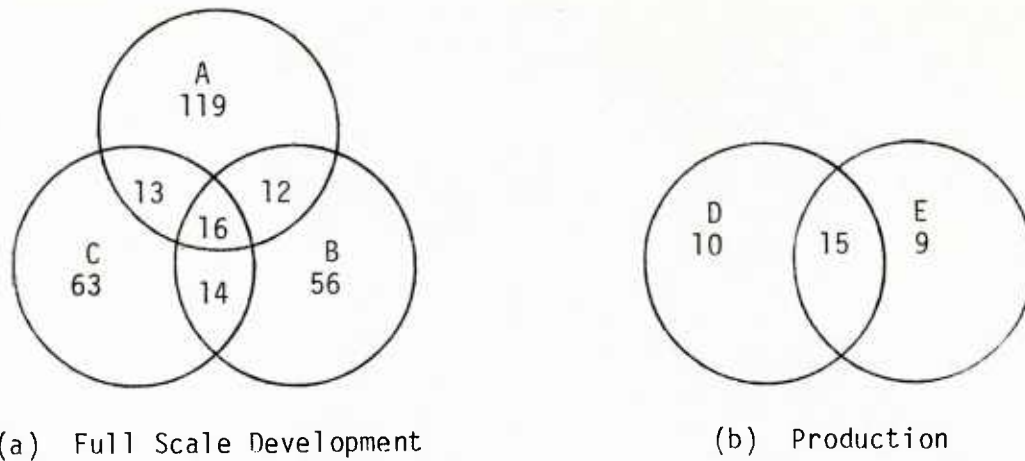


FIGURE 4-1. CDRL ITEM COMMONALITY

For the full scale development contracts, cost tracking appeared to receive the most uniform attention. Of a total of 8 different financial data item descriptions, 5 were common. For production contracts, technical manuals and provisioning requirements had the highest attention. Many data items addressed the same subjects (specifications, engineering change proposals), while maintaining different identifications (E-1104 and E-3101 plus E-1102 and E-3128 respectively). This indicates the need to examine the available DID's for consolidation or deletion.

From the analysis regarding commonality of contracted data requirements, there appears to be sufficient commonality among the CDRL items to justify the development of a data requirements checklist. There also seems to be sufficient commonality of subjects among these five contracts to justify exploring the feasibility of combining or deleting many of the current DID's.

d. Distribution. Distribution is the demand by data users for a CDRL item. The measures of distribution are the number of offices requesting a CDRL item, and the number of copies requested. Office symbols and their respective number of copies are specified in block 14 of the CDRL item (DD Form 1423).

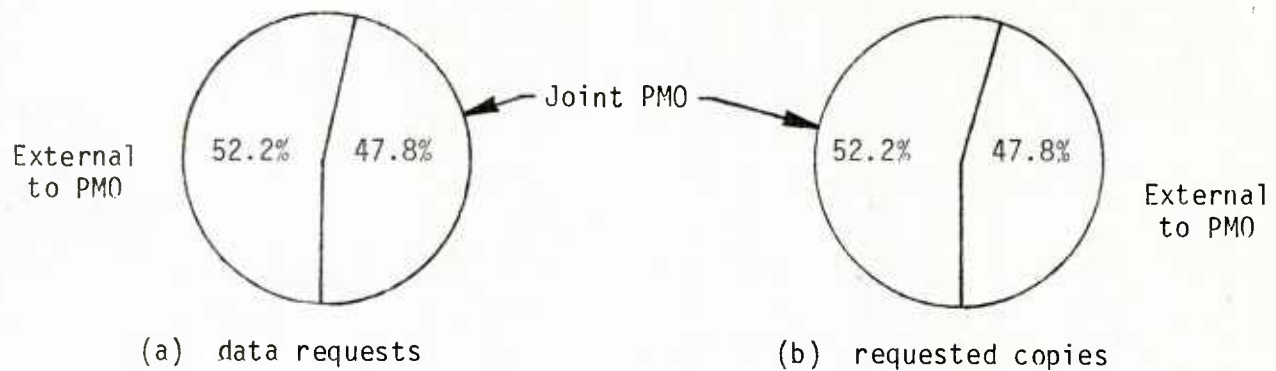


FIGURE 4-2. CONTRACT C DISTRIBUTION REQUIREMENTS

Because the CDRL items for contract C were not separately priced, the distribution requirements were carefully examined. The results of that examination are illustrated in Figure 4-2. Of the 106 data item descriptions on contract, 63 offices placed 410 requests for 803 copies of drawings, specifications, lists, plans and reports. Within the joint PMO, the procuring PMO had more requests for data (26.3% vs 21.5%) and desired less copies (23.4% vs 28.8%). Within the procuring PMO, approximately fifty percent of the data requests (53) were by the quality function.

3. Cost. Data management performance can also be measured in terms of cost. The total cost of data has two parts, acquisition and custodial. The acquisition cost includes the cost of preparing purchase specifications, the cost of acceptance, and the purchase price. The custodial cost is the sum of employment, maintenance and disposal costs. Of all these costs, acquisition costs offer the best alternative for measuring data management performance because of the availability of purchase price.

Under present practices, the purchased price of data can be found by adding the CDRL item prices contained in the contract. By determining this cost of data, management performance can be baselined for the introduction of cost reducing changes. After a reasonable implementation period, data costs

can be remeasured for favorable results. CDRL item prices can also be examined individually and compared to other contract's CDRL items to distinguish high cost drivers for special attention during change implementation. After a brief discussion of data cost the specialty group of section 2b will be examined for high cost drivers.

a. Data Cost. Data cost is the purchase price of data, multiplied by one hundred, and divided by the contract price. Expressed mathematically:

$$\text{Data Cost} = 100 \sum_{i=1}^n c_i \div CP,$$

where: c_i = cost of i th CDRL item,

n = the number of CDRL items, and

CP = the contract price.

Data Cost is nothing more than the percent of the contract price chargeable to data. Data Cost is used to dilute the effects of inflation, and to discourage misconceptions that arise from discussing large dollar amounts.

TABLE 4.5. DATA COST AS A PERCENT OF CONTRACT PRICE

Maturity Contract	FSD			PROD	
	A	B	C	D	E
Contract Price	\$386.2M	\$186.8M	\$52.9M	\$24.5M	\$4.3M
Data Cost	1.3M	12.4M	NSP	0.2M	0.2M
Data Cost (%)	0.3	6.6	---	0.8	4.7
M = 1,000,000					
NSP = Not Separately Priced					

Table 4.5 shows the cost of data compared to contract price. There is no data cost for contract C because none of the CDRL items were separately priced. The Data Costs range from 0.3 to 6.6 percent, which is 1.6 percent higher than that related in the June 1981 study (one to five) by the Office of

of the Under Secretary of Defense (OMB Directed Short Study on the Management of Contractual Data, page III-10). Because of the selection criteria of the sample care must be exercised in making any firm conclusions.

Table 4.5 does indicate that (1) data costs can be a substantial part of the contract price, and (2) there may have been some cost growth in the last 2.5 years.

b. High Cost Drivers. By examining CDRL item costs in the same context (service specialty) as Table 4-4, it should be possible to identify the high cost drivers. Each service specialty can then be adjusted, by removing the cost of necessary CDRL items from further consideration, and a target cost reduction goal can be established. Also, the general structure of a data requirements checklist can be formulated.

Table 4-6 shows the corresponding costs of the service request distribution provided in Table 4-4 and the cost ranking of services for each contract. Study reports have the highest cost concentration for all contracts. Full scale development contracts have the same high cost concentrations in the next four ranking services: drawings, specifications, test plans, and status reports. There is no commonality of high cost for the production contracts below the study report level.

TABLE 4-6. SERVICE COST DISTRIBUTION

Contract Maturity Contract	FSD		PROD	
	A	B	D	E
Drawings	\$ 300834(2)	\$ 707422(4)	\$ 18407(3)	\$ 220
Hardware Specifications	81535	576755(5)		
Software Specifications	251384(5)	82334		
Change Proposals	1342		NSP	
Waivers and Deviations	21740		2000	1520(3)
Data Accession List	10298	10720		
Test Plans	253491(4)	1151159(3)		
Program Plans	81413	324136	NSP	6070(2)
Management Plans	85471	153740		
Test Reports	109599	299687	NSP	390
Status Reports	259021(3)	1872384(2)	36824(2)	1400
Study Reports	1485544(1)	7174358(1)	142485(1)	218710(1)
Meeting Agenda	91079	39340		
Meeting Minutes	52922	5742		
Total	\$ 3085673	\$12393377	\$199716	\$228310
NSP = not separately priced, (n) = cost ranking				

There appears to be cost reduction opportunities in the drawings and specifications area, but future reprourement requirements almost dictate a "hands-off" policy. The same position can be taken for change proposals, and waivers and deviations. The Data Accession List provides the PMO with a choice of functional data which can be purchased for special purposes; therefore, the Data Accession List is judged to be a constructive addition to almost any contract data requirement. Meeting agenda and minutes documents provide the

contractor and government common records of necessary discussions, audits, and reviews. These last three items have the greatest advantage for full scale development contracts because of design maturity, and are therefore judged to also be constructive additions.

The plans (test, program and management) and reports (test, status and study) account for almost half (48.8 percent) of the data costs (for these four contracts) and hence are prime candidates for cost reduction. By summing these costs and allowing for the purchase of necessary technical publications and financial status reports, a cost reduction target is identified as shown in Table 4-7. This target represents over one forth (25.6 percent) the cost of data for these four contracts.

FIGURE 4-7. POTENTIAL DATA COST REDUCTION

Contract Maturity	FSD		PROD	
Contract	A	B	D	E
Plans and Reports Cost	\$2274539	\$10975464	\$179309	\$226570
less Technical Publications	951378	5703324	106781	203090
and Financial Status Reports	5354	66316	NSP	290
Cost Reduction Target	\$1317807	\$ 5205824	\$ 72528	\$ 23190
Target as a % of Data Cost	42.7	42.0	36.3	10.2
NSP = not sparately priced				

The cost reduction targets of table 4-7 should be considered maximum potential targets for two important reasons. First, some of the data requirements within the individual procurements may be system unique (such as air worthiness certification or nuclear hardening). And secondly, contractor pricing policies for data requirements can influence CDRL item cost as shown by the cost of

financial status reports for contracts A and B to their respective contract prices.

The deficiencies of current performance identified by this review indicate a need for some type of device that will assist data managers in establishing types and limits of data in government contracts. One useful device is a "data checklist." This checklist should be structured in three parts: (1) a quality assurance check of the accuracy of the data request, (2) the types of data expected on development contracts, and (3) the types of data expected on production contracts. Points of application could be functional data managers, PMO data managers, and review boards.

C. POLICY.

In general, data management is accomplishing its objectives. The establishment of a data management system has been achieved. Organizational structures with the assignment of responsibilities are in place, and a policy group and committee have been chartered to review, approve and implement system enhancements. The review board process is providing the desired examination and approval of solicitations. DID justification, updating approval, and publication procedures have been proven. Management information requirements have been set forth. The practices of giving consideration to the planned and probable use, assuring the evaluation of penalties and risks, and applying deferred ordering and delivery have been tested with favorable results. The success of these policies and procedures have served both the government and industry in overcoming many problems.

However, some unrealistic, conflicting or nonexistent policies have forced practitioners to ignore or generate local procedures to overcome major problems. Present policy is unrealistic on the subject of industry data products, con-

flicting on issues of costing data, deficient concerning data adequacy, and essentially silent on classified procurements.

Present policy directs practitioners to encourage offerors to propose industry documents to satisfy government needs for data. Given that the government practitioner had sufficient understanding of the industry data product (to extract necessary items and confirm their validity), current policy does not provide for the specification of such a data product as a contract requirement. Therefore, there has been no effort to include this option in the instructions to offerors and source selection guides. Should an offeror propose internal data for a competitive edge, the government could not respond because of a lack of guidance.

The reverse side of a DD Form 1423 (CDRL) instructs potential contractors that they may not separately price data. And, if it is separately priced, it will not be used for evaluation purposes. DODI 5010.12 instructs DMO's to inform PCO's to direct offerors to separately price CDRL items. This conflicting guidance surfaces a problem for PCO's in the course of executing a contract. When unpriced CDRL items are specifications, drawings, technical publications, and/or computer programs, a contracting officer can be put in a very awkward position. If during the execution of a contract, the government determines that any one of these four data products are of questionable quality (and it is not separately priced), the contracting officer must decide between accepting the data product (because of other contractor considerations) or rejecting the data product based on the strength of the contract requirements. Without a contract measure of the value of the data product, the contracting officer must attempt to develop a worth for the data product to consider acceptance or rejection. This places an unnecessary burden (cost and time) on the government,

and results in an estimate which is generally based on few facts and a great deal of judgment. Such a position is very difficult to defend.

Examination of individual CDRL items has surfaced a major policy deficiency that seems to be causing a considerable amount of field difficulty. By policy (DODI 5010.12), the requesting technical office (block 6 of the DD 1423) is charged with the responsibility of data quality (adequacy), but the technical office does not always appear in the distribution list (block 14). By not appearing in the distribution list, data quality is not challenged and the responsibility is shifted to another office. This practice has two undesirable effects: (1) the adequacy of the data must be determined in terms of a very general data item description by someone who does not fully appreciate the full purpose of the requirement; and, (2) if the data is unacceptable by one inspector and other addressees have made use of the data, the inspector feels contractually bound to accept the data.

Policy devotes one sentence (DODI 5010.12, Enclosure 4, page 8) to the subject of classified solicitations. The guidance states that classified contracts should be forwarded to higher echelon authority and then is silent.

CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

A. INTRODUCTION.

The management of data is a complex subject that is not generally well understood in the Department of the Army. This is due in part to two conditions: (1) the responsibilities for data are distributed across functional lines and (2) there is no strong advocate for data management at either DOD or Army levels. The data issue is also comprehensive and cannot be covered in a single study. Therefore, the concentration in this study has been upon the acquisition of data. The conclusions and recommendations of the study are based upon a literature review, discussions with key Data Management Officers within the DARCOM MSC's, analysis of data management policies and operating practices, and an analytical investigation of three development and two production contracts.

Though the number of contracts is small, their areas of application are comprehensive, and the analysis is thorough.

B. CONCLUSIONS.

1. There is a deficiency in data management policy. The deficiency is an absence of guidance in the determination of the types of data that should be considered for purchase. The results of this deficiency is the presence of excessive, redundant and even incomplete contracted data requirements. This deficiency can only be overcome by comparing each proposed data requirement to an approved list of data products and determining the actual need during the review board process. A detailed checklist is needed to execute this function.

2. Present practices and policies do not provide for effective determination of data adequacy. Policy assigns adequacy responsibility to the technical office appearing in block 6 of the CDRL item. Present practice is to have

CDRL items simultaneously distributed to all recipients indicated in block 14 (which may or may not include the technical office). The result is no unified adequacy determination, and no reasonable recourse for inadequate data.

3. Specifications, drawings, technical publications and computer programs should be separately priced on almost all contracts. These products play a key role in training, maintenance, repair, reprocurements, and modifications. As such, the importance of these items is secondary only to the system hardware.

4. Data management staffs and functional disciplines have a need to be informed on the procedures of composing, selecting and altering DID's. Additional understanding is also required in the procedures for securing DID approval and preparing a CDRL. These needs cannot be satisfied because of a skills shortage at the Air Force Institute of Technology.

5. Data requirements exhibit a surprising amount of subject commonality among contracts. Development and production contracts contain requirements for drawings, specifications, records, technical publications, lists, plans, and reports. Evidence suggests that: (a) development and operational test and evaluations have some redundant requirements (Reliability, Human Factors, Maintainability, etc.), (b) requests for financial and status reporting are fairly uniform, and (c) there is a heavy demand for management plans and study reports.

6. Functional discipline (Reliability, Budget, etc.) policy directs the practitioner to assure that Defense System Acquisition Review Council milestone transition is achieved at a reasonable cost. In meeting this objective, contract provisions are the best alternative for demonstrating program involvement and measuring contract successes. Data requirements are the contract provisions

used by practitioners to force contractor attention in specific areas (which becomes a controlling constraint in governing the method of contract performance). These data requirements are program and management plans, and status and study reports; and, they comprise 75.8 percent of the total data requirements. It appears that the continued recognition of more functional disciplines (Software Reliability, Support Equipment Budget, etc.) will contribute to the future growth of this statistic.

C. RECOMMENDATIONS.

1. Test and, if warranted, implement the proposed Data Requirements Checklist provided in Appendix E. Select a major subordinate command and a program/project office (preferably one about to enter full scale development) and request that they adopt and use the proposed Data Requirements Checklist. While the selectees are applying the checklist to contract preparation and award activities, collect samples of past awards made by the same (or similar) activities, and prepare a baseline data requirements description (DID's, Costs, distributions, etc.). After award of the test contracts, compare baseline and test contract results and determine effects. Then modify the proposed Data Requirements Checklist as necessary. Finally, update policy to direct data buying offices to adopt and use a Data Requirements Checklist.

2. Upgrade data management policy to direct data buying offices to instruct offerors and contractors to deliver CDRL items to the address of the technical office. Instruct the technical office to inspect and accept or reject data items, and advise the contracting officer (within a prescribed time limit) of the data item's status for payment control.

3. Enhance data management policy by instructing contracting officers to obtain separate pricing for some data products. The data products to be

separately priced are CDRL items for specifications, drawing packages, technical publications, and computer programs. This does not include those related plans and status reporting documents which also appear in the same contract exhibit. Offerors who fail to separately price these data products should be requested to provide separate prices through the clarification process of source selection, be found nonresponsive or be subject to deletion from the competitive range.

4. Expedite filling the course director vacancy for the Air Force Institute of Technology course PPM 370 (Defense Data Management). Contact service DMO's and secure the names, office symbols, and telephone numbers of personnel engaged in full time data management. Recruit data management candidates from the buying activities.

5. Conduct a joint-service study to determine the feasibility of combining and eliminating unnecessary data item descriptions. The study should: investigate the consolidation of test plan and test report data items (include functional discipline test requirements under operational suitability objectives), consider the development of a standardized status reporting data item (to address financial and delivery issues), and weigh the cost/benefits of the elimination of some of the management plans and studies.

BIBLIOGRAPHY

1. DOD Directive 5000.19, Policies for the Management and Control of Information Requirements, March 12, 1976.
2. DOD Instruction 5010.12, Management of Technical Data, December 5, 1968.
3. AR 700-51, Army Data Management Program, 28 February 1973.
4. DARCOM Supplement 1 to AR 700-51, Army Data Management Program, 27 July 1973.
5. DOD, Short Study on the Management of Contractual Data, June 1, 1981.
6. DOD Directive 4120.3, Defense Standardization and Specification Program, February 10, 1979.
7. MIL-STD-143B, Standards and Specifications, Order of Precedence for the Selection of, 12 November 1969.
8. DOD-HDBK-245A, Guide for Application and Tailoring of Requirements for Defense Materiel Acquisitions, 15 October 1979.
9. DARCOM-P 715-2, Contract Management Guidance for Technical Personnel, June 1981.
10. MIL-S-84390, Specifications, Types and Forms, 30 October 1968.
11. DOD Directive 5000.1, Major System Acquisitions, 29 March 1982.
12. DOD Instruction 5000.2, Major System Acquisition Procedures, 8 March 1983.
13. DOD Directive 5000.3, Test and Evaluation, 26 December 1979.
14. OMB Circular A-109, Major System Acquisitions, 5 April 1976.
15. MIL-HDBK-245B, Preparation of Statement of Work, 1 June 1983.
16. DOD Directive 3200.12, DOD Scientific and Technical Information Program, 15 February 1983.
17. OMB Circular A-10, Responsibilities for Disclosure with Respect to the Budget, 12 November 1976.
18. OMB Circular A-76, Policies for Acquiring Commercial or Industrial Type Products and Services Needed by the Government, 29 March 1979.

STUDY TEAM COMPOSITION

Tracy Worthington, Industrial Engineer, US Army Procurement Research Office, Army Materiel Systems Analysis Activity, Fort Lee, VA. B.S. in Industrial Engineering, 1972, Wichita State University; ME in Industrial Engineering, 1976, Texas A&M University. Prior to joining the Procurement Research Office, Mr. Worthington was an Operations Research Analyst with the Tactical Air Warfare Center and a Production Engineer with the Air Force Systems Command's Armament Division.

APPENDIX A

Data Management Officer (DMO) major responsibilities (DODD 5000.19, 12 March 1976; DODI 5010.12, 5 December 1968; and AR 700-51, 28 February 1973)

1. Implement data management policies and procedures
(AR 700-51, AMC Suppl 1: Pg. 4, Para E-1.b(1) & DODI 5010.12, Encl 4: Pg. 7, Para 6.b).
2. Establish a data management and control system
(AR 700-51, AMC Suppl 1: Pg. 4, Para E-1.b(2) & DODI 5010.12, Encl 4: Pg. 7, Para 6.b)..
3. Establish data requirements review procedures for development procurements of more than \$100,000 and research procurements of more than \$250,000 (AR 700-51, AMC Suppl 1: Pg. 8, Para E-3.a(1) & E-3.a(2)).
4. Process DRRB recommendations for DOD AMSDL changes
(AR 700-51, AMC Suppl 1: Pg. 4, Para E-1.b(4)).
5. Submit list of DMO and functional data managers to DARCOM semiannually
(AR 700-51, AMC Suppl 1: Pg. 4, Para E-1.b(5)).
6. Assist DRRB review solicitation data requirements
(AR 700-51, AMC Suppl 1: Pg. 4, Para E-1.c.(1); DODI 5010.12: Pg. 5, Para VI.I.4)
7. Maintain DRRB minutes for each solicitation
(DODI 5010.12: Pg. 4, Para VI.B)
8. Conduct an annual data requirement validation review and forward findings to DARCOM (only at major subordinate commands)
(AR 700-51, AMC Suppl 1: Pg. 10, Para E-4 & P. 4, Para E-1.b.(5))
9. Attend semiannual data managers meeting when convened by DARCOM
(AR 700-51, AMC Suppl 1: Pg. 10, Para E-5.a.)
10. Prepare inputs for acquisition and planning documents
(AR 700-51: Pg. 2, Para 4.a.(2) & DODI 5010.12: Pg. 4, Para VI.E)
11. Initiate the Data Call to all participants
(AR 700-51, AMC Suppl 1: Pg. 5, Para E-2.a.(1) & Para E-2.b.(1)(a))
12. Consolidate results of Data Call
(AR 700-51, AMC Suppl 1: Pg. 5, Para E-2.a.(2) & Pg. 6, Para E-2.b.(1)(g))
13. Determine if data items are from DOD AMSDL
(AR 700-51, AMC Suppl 1: Pg. 5, Para E-2.b.(1)(c))
14. Request, when appropriate, data item justifications (AMC Form 1484)
(AR 700-51, AMC Suppl 1: Pg. 5, Para E-2.a.(1)(c))

APPENDIX A (CONT'D)

15. Assure that one-of-a-kind DID's do not specify delivery requirements
(AR 700-51, AMC Suppl 1: Pg. 9, Para E-3.h.)
16. Assure that all DID attachments are appropriate
(AR 700-51, AMC Suppl 1: Pg. 9, Para E-3.d.)
17. Assure no duplication exists
(AR 700-51, AMC Suppl 1: Pg. 9, Para E-3.f & DODI 5010.12, Incl 4: Pg. 7, Para 6.a.)
18. Review distribution requirements
(AR 700-51, AMC Suppl 1: Pg. 6, Para E-2.b.(1)(e))
19. Determine if data has been previously furnished
(AR 700-51, AMC Suppl 1: Pg. 6, Para E-2.b.(1)(d))
20. Assure that the SOW tasks contractor to prepare data item
(AR 700-51, AMC Suppl 1: Pg. 8, Para E-3.b)
21. Schedule data submissions
(AR 700-51, AMC Suppl 1: Pg. 6, Para E-2.b.(1)(f))
22. Assure data items and SOW are consistent
(AR 700-51, AMC Suppl 1: Pg. 6, Para E-2.b.(3)(b))
23. Determine if data items are minimum essential
(AR 700-51, AMC Suppl 1: Pg. 5, Para E-2.a.(1)(a) & E-2.b.(1)(b));
DODI 5010.12: Pg. 5, Para. VI.1.3)
24. Prepare consolidated DD Form 1423's for approval
(AR 700-51, AMC Suppl 1: Pg. 5, Para E-2.a.(2))
25. Forward classified contract's requirements to higher echelon authority
for review and challenge in lieu of a DRRB.
(DODI 5010.12, Incl 4: Pg. 8, Para 6.c.)
26. Assure that, except for special provisions (DAR, APP & DARCOM PI),
the 1423's are the sole contractual list of data requirements
(AR 700-51, AMC Suppl 1: Pg. 8, Para E-3.b.)
27. Submit 1423's and supplements to PM for approval
(AR 700-51, AMC Suppl 1: Pg. 7, Para E-2.b.(4)(c))
28. Request PCO instruct offerors to separately price data items
(AR 700-51, AMC Suppl 1: Pg. 6, Para E-2.b.(3)(e))
29. Recommend appropriate DAR data clauses for contract inclusion
(DODI 5010.12, Incl 4: Pg. 8, Para 6.f)

APPENDIX A (CONT'D)

30. Submit approved 1423's and supplements to PCO
(AR 700-51, AMC Suppl 1: Pg. 7, Para E-2.c.(1))
31. Evaluate data item cost versus value
(AR 700-51, AMC Suppl 1: Pg. 6, Para E-2.b.(4)(a) & DODI 5010.12, Encl 4: Pg. 8, Para 6.f.)
32. Participate in post-contract reviews
(DODD 5000.19, Encl 5: Pg. 7, Para V.D. & DODI 5010.12, Encl 4: Pg. 8, Para 6.f.)
33. Submit negotiated costs and contracted 1423's to DARCOM
(AR 700-51, AMC Suppl 1: Pg. 4, Para E-1.b.(5) & Pg. 7, Para E-2.b.(4)(d))
34. Ascertain actual receipt of the data
(AR 700-51, AMC Suppl 1: Pg. 8, Para E-2.e.(2) & DODI 5010.12, Encl 4: Pg. 7, Para 6.c.)
35. Insure all contractual requirements have been met
(AR 700-51, AMC Suppl 1: Pg. 8, Para E-2.e & DODI 5010.12, Encl 4: Pg. 7, Para 6.c.)
36. Participate in Contract Management Reviews
(AR 700-51: Pg. 2, Para 4.a.(3) & DODI 5010.12, Encl 4: Pg. 8, Para 6.f.)
37. Submit data item cost changes, resulting from contract modifications, to DARCOM
(AR 700-51, AMC Suppl 1: Pg. 7, Para E-2.c.(3))
38. Be organizationally placed in Directorate for Research, Development and Engineering within the Technical Data Management Division (or lower branch level)
(AR 700-51, AMC Suppl 1: Pg 3, Para 5.e.)

APPENDIX B

DATA MANAGEMENT OFFICER (DMO) PRACTICES

1. Receive data call request (Command/Program/Project DMO)
 - a. from office of primary responsibility (OPR)
 - b. including supplementary materials
 - (1) need description (required operational capability, etc.)
 - (2) acquisition strategy (plans, guidance, etc.)
 - (3) other program/acquisition descriptive documents
 - c. a suspense date
2. Issue data call
 - a. through Command DMO staff (Command DMO)
 - (1) to Service/DOD/Government participants
 - (2) through functional DMO's to functional disciplines
 - b. to Service/DOD/Government participants and program management office (PMO) functional disciplines (Program/Project DMO)
 - c. with response guidance, supplementary materials and a suspense date
 - (1) prepare statement of work (SOW) clauses
 - (2) identify data/standards/specifications necessary
 - (a) DOD Index of Standards and Specifications (DODISS)
 - (b) Acquisition Management Systems and Data Requirement Control

List (AMSDL) DOD5000.19-L

- (3) security classification
- (4) utilize proper forms
 - (a) DARCOM Form 1484, Data Item Justification
 - (b) DD Form 1664, Data Item Description (DID)
 - (c) DD Form 1423, Contract Data Requirements List (CDRL)

APPENDIX B (CONT'D)

(5) certification that requirements are minimum essential

(6) to inform OPR of future data receipts and corresponding quality

3. Execute data call

a. prepare response (Service/DOD/Government participants and functional disciplines)

(1) receive and review data call request and supplemental materials

(2) study supplemental materials

(3) secure and study any additional information on the particular acquisition action when necessary

(a) contact procuring contracting officer (PCO), OPR, managers, etc.

(b) conduct interviews and discussions with experienced and knowledgeable personnel

(c) develop an insight into historical practices and an appreciation of the reasons for present government practices

(4) maintain an understanding of the response structure

(a) MIL-HDBK-245; Preparation of Statement of Work

(b) MIL-STD-881; Work Breakdown Structure for Defense Material

Items

(c) AR 700-70; Application of Specifications, Standards, and Related Documents in the Acquisition Process

(d) MIL-S-83490; Specifications, Types and Forms

(5) compose SOW clauses to task the contractor

(6) select appropriate DID's/standards/specifications

APPENDIX B (CONT'D)

(a) AMSDL, DOD 5000.19L Volumes I and II

(b) DODISS

(c) only if none of the above meet the requirement, design the needed DID/standard/specification

1 AR 700-51, Army Data Management Program

2 MIL-STD-490, Specification Practices

(7) tailor DID's/standards/specifications per DOD-HDBK-248

(8) prepare CDRL per DODI 5010.12

(9) to assure minimum essential requirements, conduct an indepth appraisal of the effort imposed

(10) prepare transmittal Disposition Form (DF, DA Form 2496)

(a) to requesting office

1 Functional DMO

2 Program/Project DMO

3 Command DMO Staff

(b) requesting to be put on distribution

1 for a copy of the awarded contract

2 for timely delivery of CDRL's

3 coordination of the consolidated solicitation

(11) forward DF and package

b. screen functional discipline receipts (Program/Project/Functional DMO)

(1) receive data call response packages

(2) confirm valid requests

(a) DODISS

(b) AMSDL

APPENDIX B (CONT'D)

- (3) sort out DID's/standards/specifications which are tailored, duplications, additions to AMSDL, "one-time" DID's, or have addenda
- (4) identify requests beyond acquisition scope
- (5) examine variations for completeness
 - (a) tailored requests are clearly marked, have no additions, and are totally understandable
 - (b) addenda conform to DODI 5010.12
 - 1 block ten of DD Form 1664 instructions
 - 2 are properly identified
 - a DID/standard/specification number on each page
 - b pages sequentially numbered
 - (c) AMSDL additions and "one-time" DID's have qualifying DARCOM Form 1484's and conform to DODI 5010.12
 - (d) coordinate duplications with requesting offices, resulting in a single requirement with increased distribution
- (6) validate CDRL's are in accordance with DODI 5010.12
 - (a) delivery schedule and quantities are deterministic
 - (b) inspection and acceptance responsibility clearly assigned
- (7) ensure proposed SOW clauses task the contractor such that compliance and requested data requirements are produced in the course of meeting the acquisition objectives
- (8) resolve deficiencies and invalid requests with petitioning functional discipline
- c. compile functional discipline receipts (Functional DMO only)
 - (1) consolidate validated requests

APPENDIX B (CONT'D)

- (a) SOW clauses (see MIL-STD-881)
 - (b) preliminary CDRL's
 - (c) tailored DID's, standards, and specifications
 - (d) "one-time" DID's and AMSDL additions with DARCOM Form 1484's
 - (e) addenda materials
- (2) sign and date the prepared by block of each CDRL
- (3) establish functional file
- (a) maintain until contract award or withdrawal
 - (b) containing: data call request, discipline data call, SOW clauses, CDRL's, and transmittal DF
- (4) prepare transmittal DF and forward package to command DMO staff office
- d. Prepare for approval (Program/Project DMO & Command DMO staff)
- (1) receive and screen Service/DOD/Government requests (as described in paragraph 3b above)
 - (2) merge Service/DOD/Government and functional requests
 - (3) assign "one-time" DID numbers (controlled by Command DMO staff office)
 - (4) secure AMSDL additions' numbers from DARCOM DMO
 - (5) prepare CDRL distribution address list
 - (6) assign consecutive exhibit line numbers to each CDRL (Exhibit letter will be added later)
 - (7) sign and date prepared by block of each preliminary CDRL
 - (8) compare Specifications/Standards Application List
 - (9) establish a contracted-data file

APPENDIX B (CONT'D)

(a) maintained for three years after contract completion or termination

(b) containing:

- 1 OPR data call request
- 2 Functional data call request
- 3 OPR coordinated SOW, CDRL and supporting lists
- 4 Review Board request/DMO concurrence

(10) coordinate SOW, CDRL and supporting lists with OPR

(11) secure CDRL approval signature and date

e. Secure approval

(1) prepare a transmittal DF to Command DMO requesting Review Board approval if expected data cost could exceed \$100000 or expected contract price could exceed \$250,000 (Command DMO staff), (NOTE: Classified packages shall be forwarded to higher echelon authority for review and approval)

(a) request PCO, OPR, and Command DMO staff representative be advised of scheduled Review Board and their attendance.

(b) attach sufficient copies of the procurement package to supply Review Board membership

1 need description, acquisition strategy, and related historical documents

2 an itemized list of "one-time" DID's and AMSDL additions

3 SOW

4 CDRL address list

5 Specifications and Standards Application List

6 CDRL

APPENDIX B (CONT'D)

- a tailored DID's/Specifications/Standards
 - b "one-time" DID's and AMSDL additions
 - c other requested DID's having addenda
- (2) set Review Board meeting (Program/Project/Command DMO)
 - (a) select time and location
 - 1 identify buildings and room numbers
 - 2 determine time periods that locations are available
 - 3 coordinate with Review Board membership
 - 4 define time, date, room and building (discounting for procurement package evaluation)
 - 5 reserve location
 - (b) prepare tasking DF
 - 1 to Review Board members, OPR, PCO, and Review Board secretary (plus Command DMO representative for Command DMO)
 - 2 informing recipients of scheduled time and place
 - 3 attach copies of 3.e(1)(b) (above) materials to DF's addressed to Review Board members
 - (c) distribute tasking DF's in advance of Review Board (to provide members time to examine and judge the quality of the materials)
- (3) Conduct Review Board (Program/Project/Command DMO Functional head members, and OPR representatives)
 - (a) review "one-time" DID's and AMSDL additions
 - 1 DARCOM Form 1484
 - a justification adequate

APPENDIX B (CONT'D)

b serious nonreceipt impact

2 DD Form 1664

a title reflects nature of data requirement

b description/purpose denotes an application which would serve more than a few functional areas

c application/interrelationship stresses special guidance on mandatory, typical, or restricted use and refers to other DID's which are highly related

d references describe nature and characteristics of the data

e preparation instructions are understandable, untasking, and have no acceptance or delivery requirements

(b) examine addenda

1 identification proper

2 content consistent with document being supplemented

3 provides guidance not found in basic document

4 revision to basic document a better answer

(c) consider tailored documents

1 clearly specified and understandable

2 exhibit a definable requirement

3 contain no written or typed additions

(d) survey CDRL's

1 delivery schedule defined

2 inspection responsibility assigned

3 acceptance incumbency fixed

APPENDIX B (CONT'D)

- 4 requirements traceable to SOW clauses
- 5 recipients have necessary need
 - a copies not excessive
 - b sufficient sharing among organizational offices
- (e) data requirements are:
 - 1 suitable for effort
 - 2 not excessive
 - 3 comprehensive
 - 4 consistent with SOW
 - 5 without duplication
 - 6 produced in the course of answering the SOW
- (f) Specifications and Standards Applications List is complete and accurate
- (g) CDRL distribution address list is complete and accurate
- (h) Review Board secretary records minutes and decision, and maintains a minutes file
- (4) issue Review Board decision (Review Board Chairman)
 - (a) approved
 - 1 acceptable as prepared
 - 2 Review Board chairman signs and dates each CDRL and returns package to responsible DMO (or DMO staff office)
 - (b) approved with changes
 - 1 not acceptable as prepared
 - a changes must be made

APPENDIX B (CONT'D)

b based on marked-up copy of package

c supplied by Review Board chairman

2 Review Board chairman initials each CDRL, returns package to responsible person, and instructs person to return it to him for signature (and date) when corrected

(c) disapproval

1 not acceptable

2 Review Board chairman returns package to responsible person, verbally explains major problems, and suggests resubmission at a later date

4. Answer data call (Program/Project DMO and Command DMO staff)

a. secure approval signature and date on CDRL from OPR

b. prepare transmittal DF to PCO/OPR

(1) with data call attached

(2) requesting offerors be advised to:

(a) provide an estimated cost for each CDRL entry

(b) recommend CDRL cost enhancements

(3) suggesting appropriate DAR data clauses

c. maintain copy of transmittal for contracted-data file

d. forward to PCO/OPR

5. Participate in source selection (Program/Project DMO and Command DMO staff at the request of Source Selection Evaluation Board Chairman)

a. develop evaluation factors and standards for Source Selection Guide

(1) compile a chart of historically awarded CDRL items

(a) DID number

APPENDIX B (CONT'D)

- (b) cost
- (c) contractor
- (d) contract award date
- (2) construct a solicitation data delivery schedule
 - (a) itemize CDRL requirements
 - (b) develop delivery schedule in terms of time after contract award
 - (c) from chart of historically awarded CDRL's develop corresponding and time-adjusted cost ranges (also use similar data items or best estimates)
- (3) compose descriptive standards for each level (area, item, factors, etc.) and identify corresponding potential risks
 - b. prepare solicitation inputs for sections L (instructions to offerors) and M (evaluation factors for award)
 - c. conduct proposal evaluations and risk assessments
 - (1) compare each proposal to Source Selection Guide standards
 - (a) request clarifications
 - (b) document deficiencies
 - (c) record findings at the lowest level
 - 1 strengths
 - 2 weaknesses
 - 3 risk assessments
 - 4 scoring
 - (2) combine scores and findings up the area level

APPENDIX B (CONT'D)

- (3) present preliminary findings to Source Selection Evaluation Board chairman
- (4) develop major concerns for each offeror
- (5) advise offerors of major concerns
- (6) evaluate offeror's best and final proposals
- d. present scoring and findings to Source Selection Advisory Council or Source Selection Authority
- e. prepare points for negotiation (at the request of chief negotiation)
 - (1) develop defensible negotiation positions
 - (2) discuss and agree on final government position with negotiation team
 - (3) attend negotiations with negotiation team
 - (4) communicate government position to offeror
- 6. Administer data receipts (Program/Project DMO)
 - a. received copy of awarded contract
 - (1) forward CDRL item costs to DARCOM
 - (2) advise recipients of CDRL item costs
 - b. construct a delivery schedule of CDRL items
 - c. note receipts of CDRL items when informed by
 - (1) the requesting office(s)
 - (2) the PCO
 - d. attend PMO reviews at the request of PM
 - e. assist PMO on contract modifications involving data requirements and inform DARCOM of results

APPENDIX C

COMMON DID IDENTIFICATION AND COSTS

(n) = n repeats

NSP = not separately priced

DID NO.	FSD			PROD	
	A	B	C	D	E
A-1001				600	500(2)
A-1018		125595	NSP		
A-3009	15428	NSP			
A-3023	388	10720	NSP		
A-3027	10298	10720			
A-3029	91079		NSP		
A-6102	6477	62180	NSP		
E-1100		5608	NSP		
E-1101		180752	NSP		
E-1104		576755(2)	NSP(2)		
E-3118	49900	5742	NSP		
E-3119	55676	42167			
E-3120	112493	42167			
E-3121	NSP		NSP		
E-7028	5037		NSP		
E-7031	122851	707422	NSP		
F-1207				NSP	NSP
F-6000	3092	66316	NSP		
F-6004	544	NSP	NSP		
F-6006	1021	NSP	NSP		
F-6007	452	NSP	NSP		
F-6008	245	NSP			
F-6009	NSP	NSP	NSP		

APPENDIX C (CONT'D)

DID NO.	FSD			PROD	
	A	B	C	D	E
H-7047	5556	20804			
H-7049		20608	NSP		
H-7051	3716	44425			
H-7053	7363	22202			
H-7055	20328	52862			
H-7058	11146	44425			
L-1400				NSP	NSP
L-6147		22050	NSP		
M-6153		5461855(15)	NSP(2)	106782(4)	203090(2)
M-6154	1856	41754	NSP	NSP	6070
M-6155		106918(2)	NSP	NSP	1110
M-6159				NSP	390
M-30419	19416	231469			
R-1741		87927(2)	NSP(2)		
R-3538	8954		NSP		
R-3544	15284		NSP		
R-7041	966		NSP		
R-7061		15466	NSP		
R-7080	3756		NSP(2)		
R-7085	9546		NSP		
S-1815		135298	NSP		
S-1825				28624	2170(2)
S-3585	1108		NSP		
S-4057	12734	NSP	NSP(2)	5000(2)	

APPENDIX C (CONT'D)

DID NO.	FSD			PROD	
	A	B	C	D	E
S-6171	956	1207974	NSP		
S-6177	5905	119455	NSP		
S-7017	4533	11879	NSP		
S-30567	3526	18559	NSP		
T-1903	11558		NSP(3)		
T-1906			NSP(2)	NSP	390
T-3703	77653		NSP		
T-3717	12185		NSP		
T-3734	13803	18543			
V-7000	1648	49938	NSP		
V-7004	580		NSP		
V-7016	1344			56704(5)	9700(6)

APPENDIX D

THE SHILLITO MEMORANDUM

ASSISTANT SECRETARY OF DEFENSE
Washington, D. C. 20301

AR

7 July 1969

MEMORANDUM FOR Assistant Secretary of the Army (I&L)
Assistant Secretary of the Navy (I&L)
Assistant Secretary of the Air Force (I&L)
Director, Defense Supply Agency
Director, National Security Agency

SUBJECT: Department of Defense Authorized Data List

Procedures have been developed for issuing Data Item Descriptions (DD Form 1664) under a uniform Defense numbering system, and for stocking and indexing them at the Naval Publications and Printing Service Office in Philadelphia, Pa. (copy attached). These procedures were prepared as the result of a decision made at the Technical Data and Standardization Policy Committee meeting on April 29, 1969.

It is requested that the Military Departments and Agencies begin to use these procedures as soon as possible. The Navy will make printing and indexing arrangements as soon as the first group of Data Item Descriptions is ready for reproduction. To allow time for preparing implementing instructions and provide for a smooth transition to the new procedures, no specific implementation date is established. However, it will be expected that all services will have begun to use the new procedures by the end of this Calendar Year.

The Index of Defense-numbered Data Item Descriptions will be entitled the "Department of Defense Authorized Data List" although Data Item Descriptions intended for common use may not be initially included. Procedures for preparing and coordinating descriptions for common use are being developed and we hope to be able to issue them within the next few months.

/s/ Barry J. Shillito
BARRY J. SHILLITO
Assistant Secretary of Defense
(Installations and Logistics)

Attachment

COPY

APPENDIX D (CONT'D)

THE SHILLITO MEMORANDUM

Procedures for Issuing Data Item Descriptions

1. The following procedures apply to Data Item Descriptions (DD Form 1664s) issued in satisfaction of requirements of DoD Instruction 5010.12, Management of Technical Data. These procedures are not intended for use in issuing Data Item Descriptions (DIDs) for "Unique" data items, i.e. data descriptions authorized for limited use such as for specific hardware systems or components thereof, or for one-time use. DIDs issued for use by a single organizational entity without restricted use within that entity are not exempt from these procedures.
2. Identification Numbers for DIDs shall be constructed as follows (Block 2, "Number" of the DD 1664):

DI-E-1234

where:

 - a. "DI" is standard for all DIDs to provide a distinctive identification feature,
 - b. "E" is letter symbol for the data functional category, and
 - c. "1234" is a nonsignificant arabic number assigned sequentially from an allotted block of numbers. The same arabic number will not be reused for different data functional categories.
3. Changes to Data Item Descriptions will be issued as revisions, with capital letters added sequentially to the DID number to identify the revision, e.g. DI-E-1234A is the first revision, DI-E-1234B the second, etc. The date shown on the DID will correspond to the date of the applicable basic issue or revision.
4. Data Functional Categories are as indicated in Attachment 1.
5. Blocks of numbers are assigned as follows (these may be suballocated):

Army	1000-1999
Navy	2000-2999
Air Force	3000-3999
DSA	4000-4499
Marine Corps	4500-4999
NSA	5000-5499

APPENDIX D (CONT'D)
THE SHILLITO MEMORANDUM

June 9, 1969

6. DIDs will be approved only by organizations designated by the applicable DoD components. Revisions will be approved only by the Office of Primary Responsibility for given DIDs.
7. "Camera ready" copy of approved DIDs will be forwarded for printing and distribution to:

Director
Navy Publications and Printing Service Office
700 Robbins Avenue
Philadelphia, Pa. 19111

8. Funding will be handled in a manner similar to that used for standardization documents.
9. The Navy Publications and Printing Service Office will reproduce, distribute, and index DIDs in accordance with instructions and agreements developed by the DoD Authorized Data List Subcommittee of the Technical Data, Standardization Policy Committee.

Attachment

APPENDIX D (CONT'D)

THE SHILLITO MEMORANDUM

Data Functional Categories

Symbol	Title and Description
A	<u>ADMINISTRATIVE/MANAGEMENT</u> : This area includes data used to administer, manage, and enforce contractual requirements; Armed Service Procurement Regulation requirements that are contained in the ADL; data designed to provide management visibility; project management reporting; and milestone management technique data such as PERT or other network information; and data for status, milestones, problems, and plans that are not functionally oriented. This area excludes technical data, although such data may be secondary within management reporting.
E	<u>ENGINEERING AND CONFIGURATION DOCUMENTATION</u> : This area includes drawings and associated specifications and standards identified by MIL-D-1000 and MIL-STD-100; design information that is separate from System/Subsystems Analyses; directly related to contractual configuration management of hardware; data acquired for hardware identification, control, change, and ancillary information required for the development and maintenance of configuration management; and specifications developed from systems to equipment level when acquired to delineate hardware parameters, constraints, and objectives.
F	<u>FINANCIAL</u> : This area includes financial data such as dollar expenditures, forecasts, status, etc., whether or not manpower, accounting, performance and contract administration information are also included. However, other functional areas such as Procurement/Production and Administrative/Management may include data item descriptions that acquire cost data as <u>secondary</u> information.
H	<u>HUMAN FACTORS</u> : This area includes data associated with human engineering; training and safety; subsystem personnel products and processes; and qualitative and quantitative personnel requirements data for planning, training, manning, etc.
L	<u>LOGISTIC SUPPORT</u> : This area includes supply and general maintenance plans and reports, transportation, handling, preservation, packing, and packaging information; and interservice materiel support requirements. Provisioning data, technical publications and engineering drawings are excluded.
M	<u>TECHNICAL PUBLICATIONS</u> : This area includes formal technical orders/manuals developed, as well as commercial, advance, real property installed equipment, and miscellaneous manuals for the installation, operation, maintenance, overhaul, training, and reference of hardware and hardware systems; and contractor instructional materials, inspection documentation, and historical type records that may accompany individual items of equipment.

APPENDIX D (CONT'D)
THE SHILLITO MEMORANDUM

Symbol	Title and Description
P	<u>PROCUREMENT/PRODUCTION</u> : This area includes data acquired for procurement, reprocurement, production and related management/surveillance information; reporting of analyses, schedules, facilities, tooling, government furnished property and materials; facility type of data associated with production; value engineering data; and cost reduction information. Engineering data required for procurement are excluded.
R	<u>RELATED DESIGN REQUIREMENTS</u> : This area includes data required by separate functional disciplines. It includes data that are design constraints/objectives such as Reliability, Maintainability, Survivability, Computability, etc. General quality assurance controls/reporting, are included, but quality assurance provisions may be included in other functional data products when they are integral to the basic data product.
S	<u>SYSTEM/SUBSYSTEM ANALYSES</u> : This area includes data directly related to or a product of the engineering and related analytical efforts except engineering data. It includes technical reporting, mathematical modeling, special design products, data on inter-relationships between various design parameters, performance documentation, and design or development investigation data that delineate performance details. Plans, engineering "road maps," and systems engineering data are also included. Design products specifically associated with other functional products may be categorized in other functional areas.
T	<u>TEST</u> : This area includes data relating to plans, procedures, and results associated with systems, equipment, and component/part testing. Qualification data, general test criteria, and special program/project test reports are also included.
V	<u>PROVISIONING</u> : This area includes data designed to support the provisioning process for preoperational and operational support. It includes data such as prescreening, cataloging, and related data products.

APPENDIX E

DATA REQUIREMENTS CHECKLIST

Instructions: This checklist should be used in conjunction with full scale development and production solicitations. There are three sections to this checklist. Sections I and II address full scale development data requirement specifications (DD Form 1423). Sections I and III address production data requirement specifications. Additions and deletions to this checklist should be approved by the local Data Management Officer.

SECTION I: Requirements Accuracy (Ref DODI 5010.12)		YES	NO
1. Block 1:	Sequence numbers assigned correctly		
2. Block 2:	Titles agree exactly with titles given in DOD 50000.19 or DD Form 1664		
3. Block 3:	subtitle (optional) supports title		
4. Block 4:	Data Item Description numbers agree exactly with DOD 5000.19L or DD Form 1664		
5. Block 5:	paragraph numbers identify effort associated with data product		
6. Block 6:	identifies valid office symbols of office who will determine technical adequacy		
7. Block 7:	coded locations for inspection and acceptance agree with office symbol in block 6		
8. Block 8:	An "A" is present for all documents requiring advanced written approval, otherwise blank		
9. Block 9:	Integrating Associate Contractor (IAC) codes correctly entered		
10. Block 10:	Correct frequency codes selected and are deterministic		
11. Block 11:	As of dates are valid or the block is blank		
12. Block 12:	Dates of first submission stated in terms of time (days, months, etc.) after contract award, or DFDEL (deferred delivery) appears with explanation in Block 16		
13. Block 13:	Date(s) of subsequent submission(s) understandable or blank (controlled by Block 10)		

DATA REQUIREMENTS CHECKLIST

[illegible]

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APPENDIX E (CONT'D)

DATA REQUIREMENTS CHECKLIST

SECTION II. Development Requirements

1. Specifications

- a. System
- b. Development
- c. Product
- d. Process
- e. Material

YES	NO	NA

2. Drawings

- a. Level I
- b. Level II
- c. Level III

3. Updating

- a. Engineering Change Proposals
- b. Specification Change Notice
- c. Request for Deviations and Waivers
- d. Task Change Proposal

4. Records

- a. meeting agendas
- b. meeting minutes

5. Technical Publications

- a. Manuals
- b. Commercial Literature
- c. Validation Records

6. Lists

- a. Long Lead Time Items
- b. Repairable Items
- c. Common and Bulk Items
- d. Data Accession
- e. Serial Number Configuration
- f. Special Tooling
- g. Special Test Equipment
- h. Support Equipment
- i. Training Equipment
- j. Standard/Modified Hand Tool

APPENDIX E (CONT'D)
DATA REQUIREMENTS CHECKLIST

7. Plans

a. Test

- (1) System
- (2) Subsystem
- (3) Component
- (4) Acceptance
- (5) Software
- (6) Equipment
- (7) Electromagnetic Interference
- (8) Reliability
- (9) Electromagnetic Compatibility
- (10) Human Factors
- (11) TEMPEST
- (12) Integration
- (13) Transportability

YES	NO	NA

b. Program

- (1) Allied Participation
- (2) Support Equipment
- (3) Training and Training Equipment
- (4) System Safety
- (5) Integrated Support
- (6) Maintenance
- (7) Technical Manual
- (8) Reliability and Maintainability Demonstration
- (9) System Integration
- (10) Logistics Support Analysis
- (11) Computer
- (12) Preservation and Packaging
- (13) Survivability
- (14) Calibration/Measurement
- (15) Supplementary Provisioning
- (16) Repair Parts
- (17) Reliability
- (18) Maintainability

c. Management

- (1) Human Engineering
- (2) Depot Maintenance Planning
- (3) Interservice
- (4) Interim Contractor Support
- (5) Technology Transfer
- (6) Production

APPENDIX E (CONT'D)

DATA REQUIREMENTS CHECKLIST

- (7) Nondestructive Inspection
- (8) Facilities Requirements
- (9) Contract Work Breakdown Structure
- (10) Design
- (11) Producibility
- (12) Product Assurance
- (13) TEMPEST Control
- (14) Configuration
- (15) Configuration Audit
- (16) Data Analysis

YES	NO	NA

8. Reports

a. Test

- (1) System
- (2) Subsystem
- (3) Component
- (4) Acceptance
- (5) Software
- (6) Equipment
- (7) Electromagnetic Interference
- (8) Reliability
- (9) Electromagnetic Compatibility
- (10) Human Factors
- (11) TEMPEST
- (12) Integration
- (13) Transportability

b. Status

- (1) Production Progress
- (2) Research and Development
- (3) Program
- (4) Contract Data
- (5) Configuration Management Accounting
- (6) Contract Funds
- (7) Functional Cost Hour
- (8) Progress Curve
- (9) Plant-wide Data
- (10) Level of Repair Analysis
- (11) Transportability
- (12) Container Design
- (13) Site Evaluations
- (14) R&M Allocations, Assessments and Analyses
- (15) R&M Data Reporting and Feedback

APPENDIX E (CONT'D)

DATA REQUIREMENTS CHECKLIST

	YES	NO	NA
(16) Failure Analysis and Corrective Action			
(17) Reliability			
(18) Quality Assurance			
(19) Subsystem Engineering Development			
(20) Subsystem Design Analysis			
(21) Technical			
(22) Computer Software Trouble			
(23) Provisioning and Other Preprocurement Screening			
(24) Design to Cost			
(25) System Safety Hazard Analysis			
(26) Critical Task Analysis			
(27) Government Furnished Equipment			
(28) Technical Manual Cost			

c. Study

(1) FCCM Design Description			
(2) Hardware Interface Description			
(3) System Description			
(4) Environmental Criteria			
(5) System Safety Engineering			
(6) Level of Repair Summary			
(7) Explosive Ordnance Disposal			
(8) Frequency Authorization			
(9) ECM Vulnerability			
(10) Corrosion Prevention & Control			
(11) Logistic Support Analysis Record			
(12) Loads Analysis			
(13) Version Description			
(14) Computer Software Coding			
(15) Training Aid and Device			
(16) Depot Maintenance			
(17) Computer Program Timing and Sizing			

APPENDIX E (CONT'D)

DATA REQUIREMENTS CHECKLIST

SECTION III. Production Requirements

1. Drawings

YES	NO	NA

2. Request for Deviations and Waivers

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3. Technical Publications

- a. Manuals
- b. Commercial Literature
- c. Validation Records
- d. Plan
- e. Status and Schedule

4. Records

- a. Technical Assistance Activity Report
- b. The Army Maintenance Management System
- c. Maintenance Allocation Chart
- d. Test and Demonstration
- e. Provisioning Requirements
- f. Supplementary Provisioning
- g. Curriculum Outline
- h. Training Course Guide
- i. Still Photographs

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